

#### CERTIFIED MAIL 7015 0640 0007 1325 8814

July 27, 2018

Air and Radiation Division
U. S. Environmental Protection Agency, Region V
77 West Jackson Boulevard,
Chicago, IL 60604



Re: Submittal of U. S. Steel – Minntac and Keetac Compliance Reports per the Requirements of 40 CFR Part 52.1235(e)(5) through (7) – Taconite Regional Haze FIP

#### U. S. Steel - Keetac (Keetac)

Keetac utilizes Ametek Model 920 analyzers to measure NOx and SO<sub>2</sub> (Serial Number AE-920-10086-1).

Keetac submits quarterly excess emission reports to the Minnesota Pollution Control Agency. Therefore, to fulfill the requirements of the excess emissions and monitoring system performance reports, a copy of the quarterly excess emissions report for the 2<sup>nd</sup> quarter is included in this submittal. Where EPA's requirements per the regulation differ from Minnesota's requirements, this information is also being included.

Any periods of startup and shut down are reported in Section 5 of the DRF-1 Form included in this submittal. There were no deviations during this reporting period.

The emission limitation for SO2 (the only pollutant currently in effect) is  $225 \, \text{lbs/hr} - 30 \, \text{day rolling}$  average. There were no deviations associated with the emission limit.

The last CEMS CGA was conducted on June 18, 2018 and is included in this report. The last CEMS RATA was conducted on March 20, 2018 and the report has been submitted under separate cover letter during the previous quarter.

#### U. S. Steel - Minntac (Minntac)

Minntac utilizes Ametek Model 920 analyzers to measure NOx and SO<sub>2</sub>. The table below outlines the serial numbers for each of the units:

Line 3	AE-920-10086-1
Line 4	AE-920-10086-2
Line 5	AE-920-10086-3
Line 6	ZA-920-10336-1
Line 7	ZA-920-10336-2

Minntac submits quarterly excess emission reports to the Minnesota Pollution Control Agency. Therefore, to fulfill the requirements of the excess emissions and monitoring system performance reports, a copy of the quarterly excess emissions report for the 2<sup>nd</sup> quarter is included in this submittal. Where EPA's requirements per the regulation differ from Minnesota's requirements, this information is also being included.

Any periods of startup and shut down are reported in Section 5 of the DRF-1 Form included in this submittal. There were no deviations during this reporting period.

The emission limitation for  $SO_2$  is a 30-day rolling average aggregate limit for indurating lines 3-7 of 498 lbs/hr when all lines are producing flux pellets, 630 lbs/hr when producing acid pellets or using the equation in 40 CFR 52.1235(b)(2)(iii) when the 30 day period includes both acid and flux pellet production. There were no deviations associated with the emission limit.

The emission limitation for NOx on Line 6 is 1.5 lbs/MMBtu based on a 30-day rolling average. However, for any 30 or more consecutive days when only natural gas is used, a limit of 1.2 lbs/MMBtu applies. There were no deviations associated with the emission limit for Line 6.

The latest CEMS RATA was conducted on Lines 3-7 on May 16-17 and May 21-23, 2018. This report has been submitted separately. The last CGAs were performed on February 22, 2018 and the results were provided in last quarters report.

If you should require any additional information, please contact me at <a href="mailto:scampbell@uss.com">scampbell@uss.com</a> or 218-778-8684.

Sincerely,

Stephani Campbell

**Environmental Control** 

Stepheni Campbell



U. S. Steel Corporation Minnesota Ore Operations P.O. Box 217 Keewatin, MN 55753

#### CERTIFIED MAIL 7015 0640 0007 1325 8791

July 27, 2018

Air Quality Compliance Tracking Coordinator Minnesota Pollution Control Agency 520 Lafayette Road North St. Paul, MN 55155-4194

Re:

U. S. Steel – Keetac Administrative Order by Consent Ouarterly Continuous Monitoring System Deviation Report

#### Dear Supervisor:

Enclosed with this letter is U. S. Steel – Keetac's (Keetac) Quarterly Continuous Emission Monitoring System Deviation report for the 2<sup>nd</sup> quarter of 2018. The Continuous Emission Monitoring System (CEMS) was certified on Keetac's Waste Gas Stack on November 6<sup>th</sup>, 2008. The CEMS was installed as a part of Keetac's Administrative Order by Consent with the State of Minnesota effective September 27<sup>th</sup>, 2007.

#### Deviations associated with Emission Limits

There was one deviation associated with emission limits.

#### Deviations associated with Monitor Downtime

There were three instances of monitor downtime that affected either  $NO_x$  or  $SO_2$ . The individual downtime duration and cause is listed in the monitor downtime section of this report.

#### Deviations associated with Monitor Bypass

Keetac utilizes a grate/kiln system for pelletizing taconite. Although this is an extremely hot process (with temperatures exceed 2500 °F in the kiln), the equipment is designed to withstand the high temperatures and will do so during normal operation. However, the grate is very susceptible to heat damage during upset conditions or if stopped for any reason while it is hot. To prevent equipment damage and heat related safety issues during these situations, large amounts of heat must be released from the grate as soon as possible. For that reason the system was designed

such that when the grate stops or gets overheated, a stack cap is lifted to release heat through an emergency stack. At this time the monitor is bypassed. These situations are the only times the monitor is bypassed. Because they represent upset conditions or process downtime (production loss), the company has a strong vested interest in minimizing both the number and duration of occurrences.

The times listed in the monitor bypass section are when the grate emergency stack cap is open and there is combustion in the kiln. This is the only time when any  $NO_x$  and  $SO_2$  are emitted. Times when the cap is open but there is no combustion in the kiln are not listed.

If you have any questions concerning these forms, please contact Stephani Campbell at (218) 778-8684.

Sincerely,

Lawrence Sutherland

General Manager

U. S. Steel - Minnesota Ore Operations

Enclosure

cc: Steve Palzkill - MPCA

File

Minnesota
Pollution
Control
Agency

#### AIR QUALITY REPORTING FORM

Checklist For Routine Submittals
-Typical Annual, Semiannual and Quarterly Submittals for Air Quality Permits

Minnesota Pollution Control Agency 520 Lafayette Road, St. Paul, MN 55155-4194 (651) 296-6300

8/01/05

Form AQRF

Facility ID #:	62B	County Facility is located in: ITAS	CA
Facility Address:	1 MINE ROAD		
Racinty radices.	KEEWATIN, MN	Zip Code:	55753
Mailing Address:	P.O.BOX 217		
	KEEWATIN, MN	Zip Code:	55753
Facility Contact Pers	son (Print Name):	Stephani Campbell	
Facility Contact Pers		<b>Environmental Control Engineer</b>	
Contact Person's Ph	one # (Include Area Code):	(218) 778-8684	
E FOLLOWING REP	ORTS ARE INCLUDED IN THE	S SUBMITTAL (CHECK ALL THAT APPLY)	):
ANNUAL REPORTS			
	ification Report (CR-04)		
NESHAP Submit Waste Combusto	rtal r Report for Class IV Waste Com	nbustors	
Equipment List	-		
Relative Accurac	y Test Audit (RATA) Results Sur	nmary (CEMS) Date(s) Completed:	
SEMIANNUAL REPO	<u>ORTS</u>		
NESHAP Submit			
Deviations Repor	t (DRF-1 or DRF-2)		
Year:			
	1st Half 2nd Half		
Calibration Erro	r Audit Results Summary (COM	S) Date(s) Completed:	
	dit (CGA) Summary (CEMS)	Date(s) Completed: 6/18/18	
QUARTERLY REPO	<u>RTS</u>		
☐ Waste Combust	or Quarterly Report (Class I. H.	III, A, C, or D Waste Combustors)	
☐ NESHAP Quart	terly Submittal		
	Units Combusting Solid Waste Re is Report (EER) (CEMS or COM		
Excess Emission	is Report (EER) (CEMS of COM	Die 101 Die 29	
Year	2018		
	1st Quarter 🛭 2nd Quart	ter 🔲 3 <sup>rd</sup> Quarter 🔲 4 <sup>th</sup> Quarter	
Indirect Heating	g Units Combusting Solid Waste	Report	
Linearity Check	Results Summary (CEMS)	Date(s) Completed:	
OTHER REPORTS			
		Date(s) Completed (if applicable)	
Please Specify:		Date(3) Completed (11 applicante)	



# Excess Emissions Reporting Form - DRF-1

# **Continuous Monitoring Systems Reporting Form**

Please note: This form has been updated. Please print, complete and remit <u>only</u> the forms. Please see the instructions in the Word version of DRF-1 to ensure proper use and understanding of definitions. <u>DO NOT</u> print and return the instructions.

Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems (COMS).	CEMS) and Continuous Opacity Monitoring Systems (COMS). DRF-1 is the form you must use to report excess emissions from a stack as recorded by your facility	Jse this form to record and report excess emissions (EE) that are identified by Continuous Monitoring Systems. This includes Continuous Emission Monitoring System
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			Address hard copy
St. Paul, MN 55155-4194	520 Lafayette Road North	Minnesota Pollution Control Agency	Compliance Tracking Coordinator, Fourth Floor

# 1) General Facility Information

INCOCIO GENERALIO	Report covers Onarter: Second	AQ file no.: 62B	Company name: U. S. Steel - Keetac
	Year:	AQ permit no.:	
	2018	13700063-005	

					-				
	AQ file no.: 62B	62B			Ą	AQ permit no.:	13700063-005	5	
	Report cover	Report covers Quarter: Second	Second	•		Year:	2018		
	) ) ) ) )		T-510						
2) CEMS/	COMS Dat	<ol><li>CEMS/COMS Data Summary Table</li></ol>	ry Table						
				<b>Duration of Monitor Downtime</b>	owntime		<b>Duration of Excess Emissions (EE)</b>	ssions (EE)	
2a)	2b)	2c)	2d)	3i)	2e)	41)	2f)	4m)	2g)
Monitor ID   Monitor ID   EU/SV ID	Monitor ID	EU/SV ID	Total Operating Time	Total Duration of Monitor   Downtime   Cumulative	Downtime	Cumulative	Exempt EE % of TOT	Cumulative Total EE	Total EE
Number	Pollutant   Number	Number	(TOT) (hr)	Downtime (hr)	% Of TOT Duration of	Duration of		Total	% of TOT
						Exempt EE		Duration of All EE	
Line 2	NOX	SV 051	1939		0.1% N/A		N/A	0	0.00%
		SV 051	1939	2	0.1% N/A		N/A		0.05%

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

	hours	3	3i) Total duration of downtime:	3i) Tc			
and the state of t	A CONTRACTOR OF THE CONTRACTOR						
The state of the s							
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	A A A A A A A A A A A A A A A A A A A						
	MANAGEMENT TO THE PROPERTY OF						
And Andrews and An	And Andrews (						
The state of the s	- Westmann proven						
Performed necessary maintenance	60 Primary Analyzer Malfunction	60 F	06/29/2018 07:59:00	06/29/2018 07:00:00	SV 051	NOX	Line 2
Performed necessary maintenance	60 Primary Analyzer Malfunction	60 F	06/29/2018 07:59:00	06/29/2018 07:00:00	SV 051	SO2	Line 2
Performed necessary maintenance	60 Preventative Maintenance	90 F	06/18/2018 11:59:00	06/18/2018 11:00:00	SV 051	SO2	Line 2
comments)	(clarifying comments)	Downtime (min)	End Date and Time of Downtime	eginning Date and Time of Downtime	Unit Being Monitored	Monitor ID Pollutant or Parameter	Monitor ID Number
3h)		3f)	3e)	3d)	3c)	3b)	3a)
	מוונטו מסאוונווווק. זוומונס מ ססףמומנס ומסוס	- politica ofo	2) PULACIOI OI MOINCO POWICINIC. Floride the following information regarding each period of mornion downs	Citate. Floring the lonowing	200		ני קבימי

<sup>\*</sup>Opacity time listed in minutes

4) Duration of Excess Emissions: Provide the following information regarding each individual excess emission Emission SV051 Unit ID Number SV051 |Monitor ID Pollutant or Number CM005 CM001 Parameter Monitored S02 NO<sub>X</sub> Beginning Date and Time of EE 6/11/2018 9:00 4l) Cumulative Duration of Exempt Excess Emissions: N A 6/11/2018 9:59 End Date and Time of EE Z Averaging Limit and 290 lb -Period ίHτ NA Reading of Exempt EE
EE with (include (example: 5 lb/hr, etc) 301 lb/hr Highest Units 4g) NA entries as part of 4i) Duration of these <u>4</u> 0 0 0 Duration of All EE Total C (clarifying comments) 4m) Cumulative Total Duration higher concentration scrubber operating normally at 7.5 pH EE occurred while setpoint, suspect Cause of EE feed material NA <u>4</u>)) Corrective Action Taken (clarifying comments) increase pH setpoint in Cut production and the scrubber to 8.0 <u>\$</u> N A 크

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were

	-	ı		-	<del></del> 1	· I	· · · · · · · · · · · · · · · · · · ·		ı	<del></del> 1		7		<del></del>	r		ı				_	1
Line 2			Monitor ID	5a)																		
SV 051	be Monitored	Required to	Emission	5b)																		
NOx and SO2	be Monitored	וג	Pollutant and Limit	5c)																		
5/8/2018 6:00	5/7/2018 22:00	5/7/2018 14:00	5/7/2018 8:59	4/25/2018 22:00	4/24/2018 7:50	4/23/2018 8:19	4/23/2018 6:46	4/23/2018 5:18	4/23/2018 5:00	4/23/2018 4:19	4/22/2018 21:00	4/22/2018 20:24	4/22/2018 19:31	4/22/2018 13:50	4/21/2018 10:06	4/21/2018 9:14	4/21/2018 6:59	4/10/2018 13:31			Beginning Date and Time of Bypass Period	5d)
5/8/2018 14:00	5/8/2018 6:00	5/7/2018 22:00	5/7/2018 14:00	4/26/2018 3:59	4/24/2018 8:50	4/23/2018 8:21	4/23/2018 8:19	4/23/2018 5:23	4/23/2018 5:17	4/23/2018 5:00	4/22/2018 23:11	4/22/2018 21:00	4/22/2018 19:35	4/22/2018 19:31	4/21/2018 10:09	4/21/2018 10:06	4/21/2018 7:16	4/10/2018 14:09			End date and time of bypass period	5e)
480	480	480	300	360	60	2	93	6	17	41	131	36	4	341	ω	52	16	38	(min)	bypass	Duration of monitor	51)
Yes	period:	during bypass		5g)																		
480	480	480	300	360	60	2	93	o	17	41	3	36	4	341	ω	52	16	38	bypass (min)		Duration of allowable	5h)
Bypass necessary to protect plant equipment		comments)	bypass (clarifying	5i)																		
N/A	comments)	taken	action	5j)																		

Bypass necessary to protect plant equipment Bypass necessary to N/A Bypass necessary to protect plant equipment Bypass necessary to N/A Bypass necessary to N/A Bypass necessary to N/A Bypass necessary to N/A		60 24 2 61 8 9 1	Yes Yes Yes Yes Yes	3 3 4 3 3 4 3 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	6/17/2018 18:30 6/17/2018 18:32 8 6/22/2018 12:07 6 6/29/2018 8:36	6/22/2018 11:43	NOx and SO2 NOx and SO2	SV 051 SV 051	Line 2 Line 2
		24 2 61 8 9 1 38 2	Yes Yes Yes Yes		6/17/2018 6/17/2018 6/22/2018	6/22/2018 11:4:	NOx and SO2	SV 051	Line 2
		2 61 8 9 1 38 1	Yes Yes Yes		6/17/2018	C			
		<u>6</u> 8 9 1 38 1	Yes Yes Yes		6/17/2018	6/17/2018 18:30	NOx and SO2	SV 051	Line 2
		8 9 4 38 4	Yes Yes			6/17/2018 17:29	NOx and SO2	SV 051	Line 2
		g 38	Yes Yes		6/17/2018 15:43	6/17/2018 15:35	NOx and SO2	SV 051	Line 2
		- 38 - ·	Yes		6/6/2018 15:43	6/6/2018 15:34	NOx and SO2	SV 051	Line 2
		38 -	Yes		6/6/2018 14:03	6/6/2018 14:01	NOx and SO2	SV 051	Line 2
Jane odarbinene	Bypası protect ı	ــــــــــــــــــــــــــــــــــــــ			6/6/2018 14:01	6/6/2018 13:23	NOx and SO2	SV 051	Line 2
Bypass necessary to N/A	protect p		Yes	7	6/6/2018 13:09	6/6/2018 13:08	NOx and SO2	SV 051	Line 2
Bypass necessary to N/A protect plant equipment	Bypas	7	Yes	7 7	6/6/2018 13:07	6/6/2018 13:00	NOx and SO2	SV 051	Line 2
Bypass necessary to N/A protect plant equipment		58	Yes	58	6/6/2018 13:00	6/6/2018 12:02	NOx and SO2	SV 051	Line 2
brotect plant equipment N/A		33	Yes	7 33	6/6/2018 11:07	6/6/2018 10:34	NOx and SO2	SV 051	Line 2
Bypass necessary to N/A protect plant equipment	Bypas: protect p	2	Yes	2	6/6/2018 9:46	6/6/2018 9:44	NOx and SO2	SV 051	Line 2
Bypass necessary to N/A protect plant equipment		79	Yes	4 79	6/6/2018 9:44	6/6/2018 8:25	NOx and SO2	SV 051	Line 2
Bypass necessary to N/A protect plant equipment		49	Yes	49	6/3/2018 13:49	6/3/2018 13:00	NOx and SO2	SV 051	Line 2
Bypass necessary to N/A protect plant equipment		46	Yes	46	6/3/2018 13:00	6/3/2018 12:14	NOx and SO2	SV 051	Line 2
Bypass necessary to N/A protect plant equipment		100	Yes	100	5/8/2018 23:40	5/8/2018 22:00	NOx and SO2	SV 051	Line 2
Bypass necessary to protect plant equipment N/A		480	Yes	480	5/8/2018 22:00	5/8/2018 14:00	NOx and SO2	SV 051	Line 2
bypass (clarifying action comments) (clarifying taken (clarifying comments)		allowable monitor bypass (min)	operating during bypass period?	monitor bypass (min)	End date and time of bypass period	Beginning Date and Time of Bypass Period	Pollutant and Limit Required to be Monitored	Emission Unit Required to be Monitored	Monitor ID number
4	+	+-	_	5f)	5e)	5d)	5c)	5b)	5a)

Monitor ID number Emission Unit Required to Required to Monitored 5b) be Monitored Pollutant and Limit 5c) Beginning Date and Time of Bypass Period 5d) 5k) Total duration of allowable monitor bypass: End date and time of bypass period 5e) Duration of monitor bypass (min) <u>5</u>f) during bypass period? 5g) bypass (min) Duration of allowable monitor 5h) 67 Reason for monitor bypass (clarifying comments) hours action taken (clarifying comments) Corrective <u>5j</u>)

# 6) CERTIFICATION

supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify under penalty of law that this document and all attachments were prepared under my direction or

Signature of Responsible Official

Printed Name of Responsible Official Lawrence Sutherland

General Manager- Minnesota Ore

July 27, 2018

Date

COMS audits	-							
	Operating			Last audit			Next test	
Subject item	hours	Monitor ID	Pollutant	date	Cal error results   Pass/fail	Pass/fail	due by:	Comments
N/A								
Cylinder gas audit's (CGA)	audit's (C	GA)						
Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
SV051/EU030	2091	CM001	NOx	6/18/2018		Pass	9/30/2018	To come the second seco
	2091	CM005	S02	6/18/2018	Low 0.2% Mid -0.5% Pass	Pass	9/30/2018	
Linearity								
Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A					High			
Relative accuracy test audit (RATA)	curacy test	audit (RAT	(A)					
Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Relative accuracy	Pass/fail	Next test due by:	Comments
SV054		CMOO1	NOX	3/20/2018	15%	Pass	3/31/2019	
		Carrier -			!			
SV051		CM005	SO2	3/20/2018	16.4%	Pass	3/31/2019	
	•							

#### CGA Test Report - 2018Q2

Facility Name: US Steel

Location: Keetac

WGS SO2 Audit Test Results

Analyzer Span: 250.0 ppm

Mfr & Model:

ametek 920 so2

Serial Number: AE-920-10086-1

Low-Level Calibration Gas

(20-30% of Span)

Concentration: 62.6

Cylinder No.: CC168937

( 50.0 ppm - 75.0 ppm)

Expiration Date: 11/08/20

Mid-Level Calibration Gas

Concentration: 141.4

(50-60% of Span)

Cylinder No.: SG9169308

( 125.0 ppm - 150.0 ppm)

Expiration Date: 10/22/20

Test Date: 06/18/18

Tester: Nick Wilson

	L	ow	Л	/lid
	Time	Monitor Value	Time	Monitor Value
Run 1	11:03:00	63.0	11:06:00	141.0
Run 2	11:13:00	62.0	11:16:00	140.0
Run 3	11:23:00	63.0	11:26:00	141.0
Avg. Monitor Response		62.7		140.7
Calibration Error		0.2		-0.5
Absolute Difference		0.1		0.7
Test Status		Pass		Pass

Calibration Error = Avg. Monitor Response - Cal. Gas Concentration X 100 Cal. Gas Concentration

#### CGA Test Report - 2018Q2

Facility Name: US Steel

Location: Keetac

WGS NOx Audit Test Results

Analyzer Span: 600.0 ppm

Mfr & Model:

ametek 920 NOx

Serial Number: AE-920-10086-1

Low-Level Calibration Gas

(20-30% of Span)

Concentration: 130.0

CC422243 Cylinder No.:

( 120.0 ppm - 180.0 ppm)

Expiration Date: 02/24/21

Mid-Level Calibration Gas

Concentration: 324.0

(50-60% of Span)

Cylinder No.: CC322615

( 300.0 ppm - 360.0 ppm)

Expiration Date: 08/30/24

Test Date: 06/18/18

Tester: Nick Wilson

	L	ow	Ŋ	/lid
	Time	Monitor Value	Time	Monitor Value
Run 1	10:03:00	131.0	10:06:00	323.0
Run 2	10:13:00	131.0	10:16:00	324.0
Run 3	10:23:00	132.0	10:26:00	324.0
Avg. Monitor Response		131.3		323.7
Calibration Error		1.0		-0.1
Absolute Difference		1.3		0.3
Test Status		Pass		Pass

Calibration Error = Avg. Monitor Response - Cal. Gas Concentration X 100 Cal. Gas Concentration

#### Summary Table by Monitor Downtime Type U. S. Steel - Keetac 2nd Quarter 2018

#### NOx

Line	Duration (Hrs)	Description				
Line 2	0	Automatic Calibration				
	0	Data Handling System Malfunction				
	0	Excess Drift Ancillary Analyzer				
	0	Excess Drift Primary Analyzer				
	1	Primary Analyzer Malfunction				
	0	Preventative Maintenance				

#### SO2

Line	Duration (Hrs)	Description					
Line 2	0	Automatic Calibration					
	0	Data Handling System Malfunction					
	0	Excess Drift Ancillary Analyzer					
	0	Excess Drift Primary Analyzer					
	1	Primary Analyzer Malfunction					
	1	Preventative Maintenance					



#### CERTIFIED MAIL 7015 0640 0007 1325 8777

July 27, 2018

Air Quality Compliance Tracking Coordinator Minnesota Pollution Control Agency 520 Lafayette Road North St. Paul, MN 55155-4194

Ro.

United States Steel Corporation, Minnesota Ore Operations – Minntac Air Emissions Permit No. 13700005-006

Quarterly Continuous Monitoring System Deviation Report

#### Dear Supervisor:

Enclosed with this letter is U. S. Steel – Minntac's (Minntac) Quarterly Excess Emissions Reporting Form for the 2<sup>nd</sup> quarter of 2018. NOx/SO<sub>2</sub> Continuous Emission Monitoring Systems (CEMS) are certified on all Agglomerator Waste Gas Lines.

#### **Deviations associated with Emission Limits**

There were no deviations during the 2<sup>nd</sup> quarter of 2018.

#### **Deviations associated with Monitor Downtime**

There were 43 instances of monitor downtime for either NOx or SO<sub>2</sub>. The individual downtime durations and causes are listed in the monitor downtime section of this report.

#### Deviations associated with Monitor Bypass

Minntac utilizes a grate/kiln system for pelletizing taconite. Although this is an extremely hot process (with temperatures exceed 2500°F in the kiln), the equipment is designed to withstand the high temperatures and will do so during normal operation. However, the grate is very susceptible to heat damage during upset conditions or if stopped for any reason while it is hot. To prevent equipment damage and heat related safety issues during these situations, large amounts of heat must be released from the grate as soon as possible. For that reason the system was designed such that when the grate stops or gets overheated, a stack cap is lifted to release heat through an emergency stack. At this time the monitor is bypassed. These situations are the only times the monitor is bypassed. Because they represent upset conditions or process downtime (production loss), the company has a strong vested interest in minimizing both the number and duration of occurrences.

The times listed in the monitor bypass section are when the grate emergency stack cap is open and there is combustion in the kiln. This is the only time when any  $NO_x$  or  $SO_2$  is emitted. Times when the cap is open but there is no combustion in the kiln are not listed.

If you have any questions concerning these forms, please contact Stephani Campbell at (218) 778-8684.

Sincerely,

Lawrence Sutherland

General Manager – Minnesota Ore Operations

Enclosure

cc: Steve Palzkill – MPCA

File

#### Minnesota Pollution Control Agency

#### AIR QUALITY REPORTING FORM

**Checklist For Routine Submittals** 

-Typical Annual, Semiannual and Quarterly Submittals for Air Quality Permits

Minnesota Pollution Control Agency 520 Lafayette Road, St. Paul, MN 55155-4194 (651) 296-6300 8/01/05

Form AQRF

HOOMICU III 770	United States Steel Corp	County Facility is located in:	OT 14	VIIIC
Facility ID #:	13700005	County Facility is located in:	ST. LO	JU12
Facility Address:	COUNTY RD. 102 MOUNTAIN IRON, MN		Zip Code:	55768
Mailing Address:	P.O.BOX 417			
	MOUNTAIN IRON, MN		Zip Code:	55768
<b>Facility Contact Per</b>	son (Print Name):	Stephani Campbell		
Facility Contact Per	son's Title:	Environmental Control		
Contact Person's Ph	one # (Include Area Code):	(218) 778-8684		
HE FOLLOWING REI	PORTS ARE INCLUDED IN THIS	S SUBMITTAL (CHECK ALL TI	HAT APPLY):	
ANNUAL REPORT				
Compliance	ertification Report (CR-04)			
<u>—</u>	ultal tor Report for Class IV Waste Col	mbustors		
Equipment Lis	_		alotodi Mar~	7 16-17, May 21-23, 20
<del></del>	• , ,	minuty (CENTES) Duto(6) Comp		
SEMIANNUAL RE	<u>PORTS</u>			
<ul><li>□ NESHAP Subn</li><li>□ Deviations Rep</li></ul>	nittal ort (DRF-1 or DRF-2)			
Yea	r:			
]	1 <sup>st</sup> Half 2 <sup>nd</sup> Half			
	ror Audit Results Summary (COM			
Cylinder Gas A	Audit (CGA) Summary (CEMS)	Date(s) Completed:		
QUARTERLY REP	<u>ORTS</u>			
	istor Quarterly Report (Class I. II.		a)	
Waste Combu	Gior Quartery Resport (Class 1, 12,	, III, A, C, or D Waste Combustor	s <i>)</i>	
☐ NESHAP Qua	arterly Submittal	, III, A, C, or D Waste Combustor	s <i>)</i>	
NESHAP Qua Direct Heatin	arterly Submittal g Units Combusting Solid Waste R	leport	s <i>)</i>	
<ul><li>☐ NESHAP Qua</li><li>☐ Direct Heatin</li><li>☑ Excess Emissi</li></ul>	arterly Submittal g Units Combusting Solid Waste R ons Report (EER) (CEMS or COM	leport		
<ul><li>□ NESHAP Qua</li><li>□ Direct Heatin</li><li>□ Excess Emissi</li></ul>	arterly Submittal g Units Combusting Solid Waste R	leport		
<ul><li>□ NESHAP Qua</li><li>□ Direct Heatin</li><li>□ Excess Emissi</li></ul>	arterly Submittal g Units Combusting Solid Waste R ons Report (EER) (CEMS or COM	deport MS) (DRF-1 or DRF-2)	4 <sup>th</sup> Quarter	
☐ NESHAP Qua ☐ Direct Heatin ☐ Excess Emissi  Yea ☐ Indirect Heati	arterly Submittal g Units Combusting Solid Waste R ons Report (EER) (CEMS or COM ar:	teport AS) (DRF-1 or DRF-2) rter		
☐ NESHAP Qua ☐ Direct Heatin ☐ Excess Emissi  Yea ☐ Indirect Heati	arterly Submittal g Units Combusting Solid Waste R ons Report (EER) (CEMS or COM ar:	Report  MS) (DRF-1 or DRF-2)  rter		



#### **Excess Emissions Reporting Form**

Air Quality Permit Program Doc Type: Excess Emission Report

Note: Please complete, and remit only the forms. Please see the instructions to ensure proper use and understanding of definitions. Do not print and return the instructions.

#### General Information about Deviation and Compliance Reporting

If your permit requires you to submit deviation reports or an annual compliance certification, you should use the Deviation Reporting Forms (DRFs) and Annual Compliance Certification Report (CR-04), unless you get Minnesota Pollution Control Agency (MPCA) approval to use another format or your facility's permit specifies otherwise. There are two separate DRF forms: DRF-1 and DRF-2.

DRF-1

is used to report direct excess stack emissions (EE) recorded by Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems

DRF-2

is used to report deviations recorded by periodic monitoring systems, deviations of permitted operating conditions and surrogate parameters whether recorded

Some examples: flow rate, temperature, throughput, control equipment operating parameters, fuel-use records

CR-04: Address hard copy

is used to report facility compliance status at the end of each year if required by your permit.

report submittals to:

Air Compliance Tracking Coordinator, Minnesota Pollution Control Agency 520 Lafayette Road North, St. Paul, Minnesota 55155-4195

Or e-mail a signed and

AQRoutineReport.PCA@state.mn.us

scanned PDF copy to:

(see e-mail instructions in "Routine Air Report Instructions Letter" at:

http://www.pca.state.mn.us/nwqh472

1) General Facility Information

Facility name:

United States Steel Corporation, Minnesota Ore Operations, Minntac AQ file no .:

AQ permit #:

County: Report covers quarter:

St. Louis Second

Year:

13700005 2018

#### 2) CEMS/COMS Data Summary Table

			Duration of Monitor Downtime		Duration of Excess Emissions (EE)				
2a)	2b)	2c)	2d)	3i)	2e)	41)	2f)	4m)	2g)
Monitor ID Number	Monitor ID Pollutant	EU/SV ID Number	Total Operating Time (TOT)	Total Duration of Monitor Downtime (hr)	Downtime % Of TOT	Cumulative Duration of Exempt EE	Exempt EE % of TOT	Cumulative Total Duration of All EE	Total EE % of TOT
MR 001	NOx	SV-103	2176	24	1.1%	0	0%	0	0%
MR 002	NOx	SV-118	1851	10	0.5%	0	0%	0	0%
MR 003	NOx	SV-127	2130	24	1.1%	0	0%	0	0%
MR 004	NOx	SV-144	2089	24	1.1%	0	0%	0	0%
MR 005	NOx	SV-151	2084	6	0.3%	0	0%	0	0%
MR 001	SO2	SV-103	2176	23	1.1%	0	0%	0	0%
MR 002	SO2	SV-118	1851	8	0.4%	0	0%	0	0%
MR 003	SO2	SV-127	2130	13	0.6%	0	0%	0	0%
MR 004	SO2	SV-144	2089	14	0.7%	0	0%	0	0%
MR 005	SO2	SV-151	2084	0	0.0%	0	0%	0	0%

#### 3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

	or, as needed		0.4\	20)	3f)	3g)	3h)
3a)	3b)	3c)	3d) Beginning Date and	3e) End Date and Time of	Duration of	Reason for Monitor	Corrective ActionTaken
Monitor ID Number	Pollutant or parameter	Emission Unit Being	Time of Downtime	Downtime	Downtime	Downtime	(clarifying comments)
	monitored	Monitored			(minutes)	(clarifying comments)	
Line 3	NOx	SV103	04/10/2018 03:00:00	04/10/2018 09:59:00	420	Data Handling System Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	04/10/2018 10:00:00	04/10/2018 10:59:00	60	Sample Interface Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	04/10/2018 11:00:00	04/10/2018 13:59:00	180	Excess Drift Primary  Analyzer	Performed necessary maintenance
Line 3	NOx	SV103	04/10/2018 14:00:00	04/10/2018 14:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	04/23/2018 12:00:00	04/23/2018 12:59:00	60	Sample Interface Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	04/27/2018 05:00:00	04/27/2018 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	05/15/2018 06:00:00	05/15/2018 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	05/28/2018 07:00:00	05/28/2018 10:59:00	240	Excess Drift Ancillary  Analyzer	Performed necessary maintenance
Line 3	NOx	SV103	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	06/04/2018 06:00:00	06/04/2018 07:59:00	120	Excess Drift Ancillary Analyzer	Performed necessary maintenance
Line 3	NOx	` SV103	06/04/2018 08:00:00	06/04/2018 08:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	04/10/2018 03:00:00	04/10/2018 09:59:00	420	Data Handling System Malfunction	Performed necessary maintenance
Line 3	SO2	SV103	04/10/2018 10:00:00	04/10/2018 13:59:00	240	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	04/10/2018 14:00:00	04/10/2018 14:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	04/27/2018 05:00:00	04/27/2018 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	05/15/2018 06:00:00	05/15/2018 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	05/28/2018 07:00:00	05/28/2018 10:59:00	240	Excess Drift Ancillary Analyzer	Performed necessary maintenance Performed necessary
Line 3	SO2	SV103	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction	maintenance  Performed necessary
Line 3	SO2	SV103	06/04/2018 06:00:00	06/04/2018 07:59:00	120	Excess Drift Ancillary Analyzer	maintenance  Performed necessary
Line 3	SO2	SV103	06/04/2018 08:00:00	06/04/2018 08:59:00	60	Automatic Calibration	maintenance
Line 4	NOx	SV118	04/24/2018 20:00:00	04/25/2018 01:59:00	360	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	NOx	SV118	05/02/2018 12:00:00	05/02/2018 13:59:00	120	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 4	NOx	SV118	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	SO2	SV118	04/24/2018 20:00:00	04/25/2018 01:59:00	360	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	SO2	SV118	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	NOx	SV127	04/10/2018 03:00:00	04/10/2018 09:59:00	420	Data Handling System  Malfunction	Performed necessary maintenance
Line 5	NOx	SV127	04/11/2018 20:00:00	04/12/2018 08:59:00	780	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 5	NOx	SV127	04/12/2018 09:00:00	04/12/2018 09:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	04/30/2018 10:00:00	04/30/2018 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	05/31/2018 13:00:00	05/31/2018 14:59:00	120	Primary Analyzer Malfunction  Excess Drift Brimary	Performed necessary maintenance Performed necessary
Line 5	SO2	SV127	04/03/2018 06:00:00	04/03/2018 07:59:00	120	Excess Drift Primary Analyzer	maintenance

#### 3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

Monitor ID Number param monit  Line 5 SC  Line 5 SC  Line 5 SC  Line 6 NC  Line 6 SC  Line 7 NC	3b) lutant or rameter onitored SO2 SO2 SO2 NOx NOx SO2 SO2	3c) Emission Unit Being Monitored  SV127  SV127  SV127  SV127  SV127  SV144  SV144  SV144	3d) Beginning Date and Time of Downtime  04/03/2018 08:00:00  04/10/2018 03:00:00  04/30/2018 10:00:00  05/31/2018 13:00:00  05/04/2018 15:00:00  05/05/2018 14:00:00	3e) End Date and Time of Downtime  04/03/2018 08:59:00  04/10/2018 09:59:00  04/30/2018 10:59:00  05/31/2018 14:59:00  05/05/2018 13:59:00	3f) Duration of Downtime (minutes) 60 420 60 120	3g) Reason for Monitor Downtime (clarifying comments)  Automatic Calibration Data Handling System Malfunction  Automatic Calibration  Primary Analyzer Malfunction	3h) Corrective ActionTaken (clarifying comments)  Performed necessary maintenance Performed necessary maintenance Performed necessary maintenance Performed necessary maintenance Performed necessary
Number param monit  Line 5 SC  Line 5 SC  Line 5 SC  Line 6 NC  Line 6 SC  Line 7 NC	soz soz soz soz soz soz soz soz soz soz	Unit Being Monitored  SV127  SV127  SV127  SV127  SV144  SV144	Time of Downtime  04/03/2018 08:00:00  04/10/2018 03:00:00  04/30/2018 10:00:00  05/31/2018 13:00:00  05/04/2018 15:00:00	Downtime  04/03/2018 08:59:00  04/10/2018 09:59:00  04/30/2018 10:59:00  05/31/2018 14:59:00	Downtime (minutes)  60  420  60  120	Downtime (clarifying comments)  Automatic Calibration  Data Handling System Malfunction  Automatic Calibration  Primary Analyzer	Performed necessary maintenance Performed necessary maintenance Performed necessary maintenance Performed necessary maintenance
Line 5 SC  Line 5 SC  Line 6 NC  Line 6 NC  Line 6 SC  Line 7 NC	SO2 SO2 SO2 NOX NOX SO2 SO2	SV127 SV127 SV127 SV144 SV144	04/10/2018 03:00:00 04/30/2018 10:00:00 05/31/2018 13:00:00 05/04/2018 15:00:00	04/10/2018 09:59:00 04/30/2018 10:59:00 05/31/2018 14:59:00	420 60 120	Data Handling System Malfunction Automatic Calibration Primary Analyzer	maintenance Performed necessary maintenance Performed necessary maintenance
Line 5 SC  Line 5 SC  Line 6 NC  Line 6 SC  Line 7 NC	SO2 SO2 NOX NOX SO2 SO2	SV127 SV127 SV144 SV144	04/30/2018 10:00:00 05/31/2018 13:00:00 05/04/2018 15:00:00	04/30/2018 10:59:00 05/31/2018 14:59:00	60 120	Malfunction  Automatic Calibration  Primary Analyzer	maintenance Performed necessary maintenance
Line 5 SC  Line 6 NC  Line 6 SC  Line 6 SC  Line 6 SC  Line 6 SC  Line 7 NC	SO2 NOX NOX SO2 SO2	SV127 SV144 SV144	05/31/2018 13:00:00 05/04/2018 15:00:00	05/31/2018 14:59:00	120	Primary Analyzer	maintenance
Line 6 NO Line 6 SO Line 7 NO	NOX NOX SO2	SV144 SV144	05/04/2018 15:00:00				Performed necessary
Line 6 SC Line 6 SC Line 6 SC Line 6 SC Line 7 NC	NOx SO2 SO2	SV144	··············	05/05/2018 13:59:00			maintenance
Line 6 SC Line 6 SC Line 6 SC Line 6 SC Line 7 NC	SO2 SO2		05/05/2018 14:00:00		1,380	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 6 SC  Line 6 SC  Line 6 SC  Line 7 NC	SO2	SV144		05/05/2018 14:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6 SC Line 6 SC Line 7 NC			05/05/2018 06:00:00	05/05/2018 13:59:00	480	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 6 SC	e0a	SV144	05/05/2018 14:00:00	05/05/2018 14:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7 NO	SO2	SV144	05/10/2018 06:00:00	05/10/2018 09:59:00	240	Excess Drift Primary Analyzer	Performed necessary maintenance
	SO2	SV144	05/10/2018 10:00:00	05/10/2018 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7 NO	NOx	SV151	05/31/2018 03:00:00	05/31/2018 07:59:00	300	Excess Drift Primary Analyzer	Performed necessary maintenance
	NOx	SV151	05/31/2018 08:00:00	05/31/2018 08:59:00	60	Automatic Calibration	Performed necessary maintenance
					<u></u>		
				-		,	
		~~~~~~		***************************************			
			***************************************	- N. T			
					1		
			T3 + H - 4				
		*.					
				- Luxumbuharan			
<del>  </del>							
			3i) Tot	al duration of downtime:	146	hours	

#### 4) Duration of Excess Emissions: Provide the following information regarding each individual excess

emission identified by a monitor. Make a separate table for each monitor, as needed.

4a)	4b)	4c)	4d)	4e)	4f)	4g)	4h)	4i)	4j)	4k)
Emission	Monitor	Pollutant or	Beginning	End Date	Limit and	Highest	Duration of	Total	Cause of EE	Corrective Action
Unit ID	ID	Parameter	Date and	and Time	Averaging	Reading of	Exempt EE	Duration of	(clarifying	Taken (clarifying
Number	Number	Monitored	Time of EE	of EE	Period	EE with Units	(include these	All EE	comments)	comments)
	:					(example: 5 lb/hr, etc)	entries as part of 4i)			
SV-103	MR 001	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-118	MR 002	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-127	MR 003	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-144	MR 004	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-151	MR 005	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
	1	4l) Cur	nulative Dur	ation of Exe	mot Excess	Emissions:	/	0	4m) Cumulat	ive Total

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system See Minn. R. 7017.1110 subp. 2c

							<b></b> .		
5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor	Emission Unit	Pollutant and	Beginning Date	End date and	Duration of	Was P.C.E.	Duration of	Reason for monitor	Corrective
ID	Required to be	Limit Required	and Time of	time of bypass	monitor	operating	allowable	bypass (clarifying	action taken
number	Monitored	to be Monitored	Bypass Period	period	bypass	during bypass	monitor	comments)	(clarifying
				·	(minutes)	period?	bypass		comments)
								Bypass necessary to	
Line 3	SV103	NOx/SO2	4/1/18 20:18	4/1/18 21:23	65	YES	65	protect plant	N/A
		1						equipment.	
		· · · · · · · · · · · · · · · · · · ·						Bypass necessary to	
Line 3	SV103	NOx/SO2	4/3/18 7:11	4/3/18 7:37	26	YES	26	protect plant	N/A
Line 3	5 7 105	1102002	1/5/10 /.11	175710 1.57	""	150		equipment.	,
								Bypass necessary to	
		3.50 (0.00	1440001	414/10.0.40	104	חשמצ	104		NT/A
Line 3	SV103	NOx/SO2	4/4/18 8:04	4/4/18 9:49	104	YES	104	protect plant	N/A
	*******							equipment.	
								Bypass necessary to	
Line 3	SV103	NOx/SO2	4/4/18 10:03	4/4/18 11:21	78	YES	78	protect plant	N/A
								equipment.	
		***************************************	r <del></del>					Bypass necessary to	-
Line 3	SV103	NOx/SO2	4/4/18 11:25	4/4/18 11:29	4	YES	4	protect plant	N/A
Ellie 2	2 4 102	1102/302	4/4/10 11.23	4/4/10 11.27	7	125		equipment.	
<u> </u>					1				
1								Bypass necessary to	N. V. J.
Line 3	SV103	NOx/SO2	4/5/18 10:12	4/5/18 10:40	28	YES	28	protect plant	N/A
								eguipment.	
								Bypass necessary to	
Line 3	SV103	NOx/SO2	4/10/18 2:40	4/10/18 3:24	44	YES	44	protect plant	N/A
	5 / 1 / 2	1107400						equipment.	
			<del></del>					Bypass necessary to	
T	077102	NTO-/502	AME/10 12:22	4/17/10 14.20	70	YES	70		N/A
Line 3	SV103	NOx/SO2	4/17/18 13:27	4/17/18 14:38	70	IES	'0	protect plant	IVA
								equipment.	
		ļ						Bypass necessary to	
Line 3	SV103	NOx/SO2	4/18/18 12:19	4/18/18 17:07	288	YES	288	protect plant	N/A
								equipment.	
								Bypass necessary to	
Line 3	SV103	NOx/SO2	4/22/18 22:05	4/22/18 22:25	20	YES	20	protect plant	N/A
	5,100	110,200						equipment.	
		<u> </u>	<del></del>		\ <del></del>		<b></b>	Bypass necessary to	
	077100	NO (000	1/22/10 17:05	4/22/10 17-20		YES	24	1	N/A
Line 3	SV103	NOx/SO2	4/23/18 17:05	4/23/18 17:29	24	1 E3	44	protect plant	11///
								equipment.	
	•							Bypass necessary to	
Line 3	SV103	NOx/SO2	4/23/18 18:43	4/23/18 21:24	161	YES	161	protect plant	N/A
							Í	equipment.	
	*****						į	Bypass necessary to	
Line 3	SV103	NOx/SO2	4/24/18 16:03	4/24/18 18:49	165	YES	165	protect plant	N/A
	4,							equipment.	
					· · · · · · · · · · · · · · · · · · ·	<del></del>		Bypass necessary to	
	07.71.02	3.10 /0.00	4/07/10 10:04	1/0///10 11:45	101	37770	101		N/A
Line 3	SV103	NOx/SO2	4/26/18 10:04	4/26/18 11:45	101	YES	101	protect plant	IN/A
								equipment.	-
								Bypass necessary to	
Line 3	SV103	NOx/SO2	4/27/18 5:18	4/27/18 5:26	8	YES	8	protect plant	N/A
								equipment.	
	<del> </del>							Bypass necessary to	
Line 3	SV103	NOx/SO2	4/27/18 5:38	4/27/18 6:35	56	YES	56	protect plant	N/A
Time 2	51105	1,000002	.,2,,100,00	.,,,100,00	1	125	] -	equipment.	
								Bypass necessary to	<del></del>
,	C774.0-	10 500	ED/10.10.00	5/0/10 10 07	30	3700	20		NT/A
Line 3	SV103	NOx/SO2	5/2/18 10:06	5/2/18 10:36	30	YES	30	protect plant	N/A
		<u> </u>						equipment.	
							İ	Bypass necessary to	
Line 3	SV103	NOx/SO2	5/2/18 14:45	5/2/18 14:53	8	YES	8	protect plant	N/A
								equipment.	
		<del>                                     </del>						Bypass necessary to	
T:	63/102	Novigon	5/3/18 11:39	5/3/18 11:57	18	YES	18	protect plant	N/A
Line 3	SV103	NOx/SO2	2/3/16 11:39	1011011.5/	10	1113	10	1 - "	14/57
		L		L	L	L	<u> </u>	equipment.	

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system See Minn. R. 7017.1110 subp. 2c

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor	Emission Unit	Pollutant and	Beginning Date	End date and	Duration of	Was P.C.E.	Duration of	Reason for monitor	Corrective
ID	Required to be	Limit Required	and Time of	time of bypass	monitor	operating	allowable	bypass (clarifying	action taken
number	Monitored	to be Monitored	Bypass Period	period	bypass	during bypass	monitor	comments)	(clarifying
Hamber	Worktoroa	to be mornered	Dypace : and	P	(minutes)	period?	bypass		comments)
					<u> </u>			Bypass necessary to	37/4
Line 3	SV103	NOx/SO2	5/5/18 2:45	5/5/18 3:05	20	YES	20	protect plant	N/A
								equipment.	
						i		Bypass necessary to	
Line 3	SV103	NOx/SO2	5/5/18 14:18	5/5/18 14:58	40	YES	40	protect plant	N/A
1.								equipment.	
								Bypass necessary to	
Line 3	SV103	NOx/SO2	5/7/18 5:36	5/7/18 12:02	386	YES	386	protect plant	N/A
}								equipment.	
								Bypass necessary to	
Line 3	SV103	NOx/SO2	5/7/18 12:21	5/7/18 12:43	22	YES	22	protect plant	N/A
======	<b>4</b> ·				]			equipment.	
			***		·			Bypass necessary to	
Line 3	SV103	NOx/SO2	5/15/18 22:32	5/16/18 0:59	146	YES	146	protect plant	N/A
Lucs	B V 103	1102/302	3/13/10 22.32	3,10,10 0.03	1.0	1	- 10	equipment.	·
					<del>                                     </del>		-	Bypass necessary to	
T : 2	037102	NOx/SO2	5/16/18 8:59	5/16/18 21:58	779	YES	779	protect plant	N/A
Line 3	SV103	NOX/SO2	3/10/16 6.39	3/10/16 21.36	119	1100	119	equipment.	17/21
					ļ <del>-</del>			Bypass necessary to	
	071100	370 (000	60000415	6/0/10 / 10	(2)	NE Č	62	f - "	N/A
Line 3	SV103	NOx/SO2	6/3/18 4:15	6/3/18 5:18	62	YES	62	protect plant	17/74
								equipment.	
}								Bypass necessary to	37/4
Line 3	SV103	NOx/SO2	6/4/18 19:18	6/4/18 20:14	56	YES	56	protect plant	N/A
								equipment.	
				1				Bypass necessary to	
Line 3	SV103	NOx/SO2	6/5/18 2:26	6/5/18 2:46	20	YES	20	protect plant	N/A
L								equipment.	
							1	Bypass necessary to	
Line 3	SV103	NOx/SO2	6/6/18 1:16	6/6/18 1:30	14	YES	14	protect plant	N/A
								equipment.	
					1			Bypass necessary to	
Line 3	SV103	NOx/SO2	6/6/18 9:54	6/6/18 10:36	42	YES	42	protect plant	N/A
					1			equipment.	
					1			Bypass necessary to	
Line 3	SV103	NOx/SO2	6/6/18 12:56	6/6/18 13:10	14	YES	14	protect plant	N/A
						-		equipment.	
			-					Bypass necessary to	
Line 3	SV103	NOx/SO2	6/7/18 9:43	6/7/18 11:14	91	YES	91	protect plant	N/A
						1	ŀ	equipment.	
								Bypass necessary to	
Line 3	SV103	NOx/SO2	6/8/18 13:19	6/8/18 14:12	52	YES	52	protect plant	N/A
	5 , 105	110111111						equipment.	
<b>—</b>					<del> </del>	****		Bypass necessary to	
Line 3	SV103	NOx/SO2	6/9/18 3:01	6/9/18 5;31	149	YES	149	protect plant	N/A
Lines	0,103	1102002	6,7,10 5.01	0,9,100,01	1.5			equipment.	
			***************************************					Bypass necessary to	
Line 3	SV103	NOx/SO2	6/9/18 6:17	6/9/18 8:31	133	YES	133	protect plant	N/A
Line 3	3 V 103	NOX/302	0/9/18 0.17	0///18 6.51	1,55	1 100	133	equipment.	1,112
			+			<del>                                     </del>		Bypass necessary to	
1	077102	NO/902	6/0/10 10-20	6/0/19 10:22	,	YES	2	protect plant	N/A
Line 3	SV103	NOx/SO2	6/9/18 10:20	6/9/18 10:22	2 .	1 153			71/17
	1		ļ		ļ	<del>                                     </del>	<del> </del>	equipment.	-
1.		170 17	cheno in a	Z/10/10 10 15	10	777.0	12	Bypass necessary to	] NI/A
Line 3	SV103	NOx/SO2	6/18/18 13:32	6/18/18 13:45	12	YES	12	protect plant	N/A
					1			equipment.	
						]	l	Bypass necessary to	] ,,,,
Line 3	SV104	NOx/SO2	6/18/18 14:07	6/18/18 15:03	56	YES	56	protect plant	N/A
				L	1		l	equipment.	<u>J.,</u>

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system See Minn. R. 7017.1110 subp. 2c

F.3		6-1	5d)	5e)	5f)	5g)	5h)	5i)	5j)
5a)	5b)	5c)		5e)	Duration of	Was P.C.E.	Duration of		Corrective
Monitor	Emission Unit	Pollutant and	Beginning Date	End date and	monitor	operating	allowable	Reason for monitor	action taken
ID	Required to be	Limit Required	and Time of	time of bypass	bypass	during bypass	monitor	bypass (clarifying	(clarifying
number	Monitored	to be Monitored	Bypass Period	period	(minutes)	period?	bypass	comments)	comments)
			<del></del>		(minutes)	penou.	Бурссь	Bypass necessary to	
١,, ,	97/105	NIO/002	(/02/10 15.02	£/00/10 10:00	210	YES	210	protect plant	N/A
Line 3	SV105	NOx/SO2	6/23/18 15:02	6/23/18 18:32	210	I ES	210		14/72
							ļ	equipment.	
								Bypass necessary to	27/1
Line 3	SV106	NOx/SO2	6/27/18 8:22	6/27/18 12:20	237	YES	237	protect plant	N/A
		į						equipment.	
								Bypass necessary to	
Line 3	SV107	NOx/SO2	6/29/18 7:38	6/29/18 12:10	271	YES	271	protect plant	N/A
								equipment.	
	*****							Bypass necessary to	
Line 3	SV108	NOx/SO2	6/29/18 12:14	6/29/18 12:22	8	YES	8	protect plant	N/A
Lines	34100	1402002	0/25/10 12:14	0/25/10 12/22		1.20		equipment.	
			···					Bypass necessary to	•
	077110	NTO 1000	4/5/10 0.50	4/5/10 11.10	م م	YES	80	protect plant	N/A
Line 4	SV118	NOx/SO2	4/5/18 9:58	4/5/18 11:19	80	1 LEO	00		IV/A
				ļ				equipment.	
							_	Bypass necessary to	3.743
Line 4	SV118	NOx/SO2	4/5/18 11:21	4/5/18 11:23	2	YES	2	protect plant	N/A
			1					equipment.	
	1.10-111							Bypass necessary to	
Line 4	SV118	NOx/SO2	4/9/18 19:31	4/9/18 21:59	147	YES	147	protect plant	N/A
				1				equipment.	
		-						Bypass necessary to	
Line 4	SV118	NOx/SO2	4/23/18 17:59	4/24/18 11:16	1037	YES	1037	protect plant	N/A
L LINE 4	5 4 1 1 0	NOMBOZ	4/23/10 17.37	7,24,10 11.10	1037		1	equipment.	
							<del>                                     </del>	Bypass necessary to	
	037110	NO (500	4/24/18 11:18	4/24/18 17:00	341	YES	341	protect plant	N/A
Line 4	SV118	NOx/SO2	4/24/18 11:10	4/24/16 17.00	341	1123	3-71		1,771
	ļ					<del> </del>	<b>!</b>	equipment.	
					25	******	20	Bypass necessary to	NT/A
Line 4	SV118	NOx/SO2	4/24/18 17:40	4/24/18 18:08	28	YES	28	protect plant	N/A
				·		ļ		equipment.	
								Bypass necessary to	37/4
Line 4	SV118	NOx/SO2	4/24/18 18:33	4/24/18 19:44	70	YES	70	protect plant	N/A
								equipment,	
								Bypass necessary to	
Line 4	SV118	NOx/SO2	4/24/18 20:32	4/24/18 20:50	18	YES	18	protect plant	N/A
								equipment.	
		<u> </u>				1		Bypass necessary to	
Line 4	SV118	NOx/SO2	4/25/18 11:29	4/25/18 12:23	54	YES	54	protect plant	N/A
L ZIIIO .	51110	1101202	"					equipment.	
<u> </u>					<u> </u>	-	1	Bypass necessary to	
Time 1	037110	NOx/SO2	4/26/18 7:32	4/26/18 7:42	10	YES	10	protect plant	N/A
Line 4	SV118	NOX/302	4/20/16 /.32	4/20/18 /.42	10	1.00		equipment.	1 1111
	4	<del> </del>				<del> </del>	<del></del>	Bypass necessary to	
				4/20/18 10 14	2.5	, xmc	26	1	N/A
Line 4	SV118	NOx/SO2	4/30/18 12:48	4/30/18 13:14	26	YES	20	protect plant	INZ
		1				<u> </u>		equipment.	
				1				Bypass necessary to	,
Line 4	SV118	NOx/SO2	5/2/18 0:12	5/2/18 4:17	164	YES	164	protect plant	N/A
	<u> </u>	<u> </u>	L					equipment.	
								Bypass necessary to	1
Line 4	SV118	NOx/SO2	5/3/18 13:52	5/3/18 17:27	214	YES	214	protect plant	N/A
							l	equipment,	L
					<u> </u>	1		Bypass necessary to	
Line 4	SV118	NOx/SO2	5/18/18 8:50	5/18/18 13:32	282	YES	282	protect plant	N/A
Litte 4	24110	1100002	3,10,10 0.30	3,10,10,15.52				equipment.	
	1	<del></del>	<del> </del>	<del> </del>		-		Bypass necessary to	1
T := - 4	037110	NO. /CO2	5/30/18 15:14	5/30/18 16:21	66	YES	66	protect plant	N/A
Line 4	SV118	NOx/SO2	1 3/30/10 13.14	3/30/10 10.21	1	11111		equipment.	1 - "
1		1		<u> </u>	1	<u> </u>		l edinbinent	1

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system See Minn. R. 7017.1110 subp. 2c

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollufant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 4	SV118	NOx/SO2	5/31/18 13:09	5/31/18 13:40	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	6/4/18 9:01	6/4/18 9:13	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	6/27/18 7:30	6/27/18 17:34	603	YES	603	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	6/27/18 17:58	6/27/18 17:59	1	YES	1	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	6/27/18 18:59	6/27/18 21:07	128	YES	128	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	6/29/18 7:38	6/29/18 10:56	197	YES	197	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/2/18 7:38	4/2/18 11:39	240	YES	240	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/10/18 10:17	4/10/18 13:07	170	YES	170	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/11/18 6:35	4/11/18 6:43	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/13/18 17:15	4/13/18 17:19	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/\$O2	4/13/18 17:25	4/13/18 17:35	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/13/18 17:39	4/13/18 17:41	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/13/18 17:45	4/13/18 17:49	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:00	4/14/18 23:08	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:10	4/14/18 23:24	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:28	4/14/18 23:32	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:36	4/14/18 23:40	4	YES	4	Bypass necessary to protect plant equipment. Bypass necessary	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:42	4/14/18 23:46	4	YES	4	to protect plant equipment.  Bypass necessary	N/A
Line 5	SV127	NOx/SO2	4/14/18 23:50	4/14/18 23:54	4	YES	4	to protect plant equipment.	N/A

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5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 5	SV127	NOx/SO2	4/16/18 15:00	4/16/18 15:59	58	YES	58	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/18/18 7:59	4/19/18 2:15	1096	YES	1096	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/19/18 2:51	4/19/18 3:48	56	YES	56	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 7:57	4/23/18 8:03	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 8:07	4/23/18 8:13	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 8:17	4/23/18 8:29	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 8:31	4/23/18 8:35	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/\$02	4/23/18 8:37	4/23/18 8:46	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 8:48	4/23/18 8:58	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 9:00	4/23/18 9:06	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 9:10	4/23/18 9:14	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	. SV127	NOx/SO2	4/23/18 9:16	4/23/18 9:20	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 9:22	4/23/18 9:26	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	. SV127	NOx/SO2	4/23/18 9:28	4/23/18 9:38	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/23/18 9:42	4/23/18 9:48	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/25/18 8:10	4/25/18 8:47	36	YES	36	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/25/18 8:53	4/25/18 9:03	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/25/18 9:09	4/25/18 9:15	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/25/18 9:39	4/25/18 9:45	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 16:54	4/28/18 16:58	4	YES	4	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system See Minn. R. 7017.1110 subp. 2c

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 5	SV127	NOx/SO2	4/28/18 17:00	4/28/18 17:06	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:08	4/28/18 17:10	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:15	4/28/18 17:17	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:19	4/28/18 17:23	. 4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:25	4/28/18 17:27	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:31	4/28/18 17:35	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Lìne 5	SV127	NOx/SO2	4/28/18 17:39	4/28/18 17:47	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/28/18 17:49	4/28/18 17:53	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 10:24	4/30/18 10:32	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 10:34	4/30/18 10:40	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 10:42	4/30/18 10:48	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 10:52	4/30/18 11:00	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/\$02	4/30/18 11:08	4/30/18 11:14	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 11:16	4/30/18 11:21	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	4/30/18 11:23	4/30/18 11:35	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/2/18 10:47	5/2/18 12:05	78	YES	78	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/4/18 6:19	5/4/18 11:14	215	YES	215	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/15/18 8:03	5/15/18 8:48	44	YES	44	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/15/18 8:52	5/15/18 8:58	6	YES	6	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	5/15/18 9:02	5/15/18 9:54	52	YES	52	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system See Minn. R. 7017.1110 subp. 2c

Monitor   Emission Unit   Pollutant and Required to be   Monitored   Unit Required   Unit Required to be   Monitored   Unit Required   Unit Department   Unit Depart	5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Emission Unit   Poliulant and   Poliulant an	σαγ	0.07	· · · · · · · · · · · · · · · · · · ·			<i>′</i>			_ , ,	
Comments	Monitor	Emission Unit	Pollutant and			l			l	
Comments   Monitored   Line 5   SV127   NOw/SO2   5/17/18 10:32   5/17/18 10:54   22   YES   22   Line 5   SV127   NOw/SO2   5/17/18 10:55   5/17/18 11:05   8   YES   8   Line 5   SV127   NOw/SO2   5/17/18 11:07   5/17/18 11:29   22   YES   22   Line 5   SV127   NOw/SO2   5/18/18 7:36   5/18/18 10:29   173   YES   173   Line 5   SV127   NOw/SO2   5/18/18 7:36   5/18/18 10:29   173   YES   173   Line 5   SV127   NOw/SO2   5/26/18 16:32   S/26/18 16:38   4   YES   4   Sypass necessary to protect plant equipment. Sypass necessary to protect plant equipment	ID	Required to be	Limit Required	and Time of	time of bypass	l		l	•, • -	
Line 5 SV127 NOw/SO2 5/17/18 10:32 5/17/18 10:54 22 YES 22 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/17/18 10:56 5/17/18 11:05 8 YES 8 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/17/18 11:07 5/17/18 11:29 22 YES 22 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/17/18 11:07 5/17/18 11:29 22 YES 22 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/18/18 13:09 5/18/18 10:28 173 YES 173 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/18/18 13:32 5/20/18 16:36 4 YES 4 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/20/18 16:32 5/20/18 16:36 4 YES 4 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/20/18 16:32 5/20/18 16:36 4 YES 4 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/20/18 16:36 5/20/18 16:36 4 YES 32 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/20/18 13:44 5/21/18 14:16 32 YES 32 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/26/18 5:36 5/26/18 5:59 23 YES 23 by pass necessary to protect plant equipment.  Line 5 SV127 NOw/SO2 5/26/18 5:36 5/26/18 13:19 180 YES 180 to protect plant equipment.  Line 5 SV127 NOw/SO2 5/26/18 13:27 5/26/18 13:43 16 YES 16 Sypass necessary to protect plant equipment.  Line 6 SV128 NOw/SO3 5/26/18 22:32 5/26/18 22:59 26 YES 26 YES 26 Sypass necessary to protect plant equipment.  Line 8 SV130 Now/SO3 5/26/18 13:39 6/7/18 19:29 350 YES 350 to protect plant equipment.  Line 9 SV131 Now/SO6 6/13/18 10:08 6/13/18 14:06 238 YES 238 Sypass necessary to protect plant equipment.  Line 9 SV131 Now/SO6 6/13/18 10:08 6/13/18 14:06 238 YES 238 to protect plant equipment.  Line 10 SV132 Now/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 Sypass necessary to protect plant equipment.  Line 10 SV132 Now/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 Sypass necessary to protect plant equipment.  Line 10 SV132 Now/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 Sypass necessary to protect plant equipment.  Line 10 SV132 Now/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 Sypass necessary to protect plant equipment.  Expanse necessary to protect plant equipment.  Expans	number	Monitored	to be Monitored	Bypass Period	period			l	comments)	
Line 5   SV127   NOw/SO2   5/17/18 10:32   5/17/18 11:05   8   YES   8   Equipment   N/A equ						(minutes)	penods	bypass	Rypage pacegany	commenta
Line 5   SV127   NOx/SO2   S/17/18 10:58   S/17/18 11:05   8   YES   8   Bypass necessary to protect plant equipment.   N/A equipment.		0) 440		F/47/40 40:00	F474040.54	00	VEC	22	''	NI/A
Line 5   SV127   NOx/SO2   S/17/18 10:56   S/17/18 11:05   8   YES   8   Bypass necessary to protect plant equipment.   SV127   NOx/SO2   S/17/18 11:07   S/17/18 11:29   22   YES   22   Bypass necessary to protect plant equipment.   SV127   NOx/SO2   S/18/18 7:36   S/18/18 10:28   173   YES   173   Sypass necessary to protect plant equipment.   SV127   NOx/SO2   S/18/18 13:32   S/20/18 16:36   4   YES   4   Bypass necessary to protect plant equipment.   SV127   NOx/SO2   S/20/18 16:32   S/20/18 16:36   4   YES   4   Bypass necessary to protect plant equipment.   SV127   NOx/SO2   S/21/18 13:44   S/21/18 14:16   32   YES   32   Dypass necessary to protect plant equipment.   Bypass necessary to protect plant equipment.   SV127   NOx/SO2   S/26/18 5:36   S/26/18 5:59   23   YES   23   Bypass necessary to protect plant equipment.   SV127   NOx/SO2   S/26/18 5:59   S/26/18 13:19   180   YES   180   Bypass necessary to protect plant equipment.   Bypass necessary to protect plant equipment.   SV127   NOx/SO2   S/26/18 13:27   S/26/18 13:43   16   YES   16   Bypass necessary to protect plant equipment.   Bypass necessary to protect plant equipment.   SV128   NOx/SO2   S/26/18 13:27   S/26/18 13:43   16   YES   16   Bypass necessary to protect plant equipment.   Sypass necessary t	Line 5	SV127	NOX/SO2	5/17/18 10:32	5/17/18 10:54	2.2	169	22	, .	INA
Line 5   SV127   NOx/SO2   5/17/18   10:58   SV127   NOx/SO2   5/17/18   11:07   5/17/18   11:29   22   YES   22   Sypass necessary to protect plant equipment.   N/A equipment.										
Line 5   SV127   NOx/SO2   S/17/18   11:07   S/17/18   11:29   22   YES   22   Line 5   SV127   NOx/SO2   S/18/18   7:38   S/18/18   10:29   173   YES   173   Sypass necessary to protect plant equipment.   SV127   NOx/SO2   S/18/18   16:38   S/18/18   10:29   173   YES   173   Sypass necessary to protect plant equipment.   SV127   NOx/SO2   S/20/18   16:38   4   YES   4   Sypass necessary to protect plant equipment.   SV127   NOx/SO2   S/20/18   16:38   4   YES   4   Sypass necessary to protect plant equipment.   SV127   NOx/SO2   S/21/18   13:44   S/21/18   14:16   32   YES   32   Sypass necessary to protect plant equipment.   SV127   NOx/SO2   S/26/18   5:36   S/26/18   5:59   23   YES   23   Sypass necessary to protect plant equipment.   SV127   NOx/SO2   S/26/18   5:36   S/26/18   5:59   23   YES   23   Sypass necessary to protect plant equipment.   SV127   NOx/SO2   S/26/18   8:59   S/26/18   13:19   180   YES   180   Sypass necessary to protect plant equipment.   SV127   NOx/SO2   S/26/18   13:27   S/26/18   13:43   16   YES   16   Sypass necessary to protect plant equipment.   SV128   NOx/SO3   S/29/18   22:32   S/29/18   22:59   26   YES   26   Sypass necessary to protect plant equipment.   Sypass necessary to protect plant equipment.   SV129   NOx/SO4   S/30/18   9:59   S/31/18   1:18   919   YES   919   Sypass necessary to protect plant equipment.   SV129   NOx/SO5   S/31/18   1:18   919   YES   919   Sypass necessary to protect plant equipment.   SV129   NOx/SO5   S/31/18   1:18   919   YES   919   Sypass necessary to protect plant equipment.   SV129   NOx/SO5   S/31/18   1:18   919   YES   919   Sypass necessary to protect plant equipment.   SV129   NOx/SO5   S/31/18   1:18   919   YES   919   Sypass necessary to protect plant equipment.   SV129   SV131   NOx/SO5   S/31/18   1:18   S/318   S/3								_		
Line 5   SV127   NOx/SO2   S/17/18 11:07   S/17/18 11:29   22   YES   22   Bypass necessary to protect plant equipment.   N/A equipment.	Line 5	SV127	NOx/SO2	5/17/18 10:56	5/17/18 11:05	8	YES	8		N/A
Line 5   SV127   NOx/SO2   5/17/18 11:07   5/17/18 11:29   22   YES   22   10 protect plant equipment.   N/A equipment.			-						equipment.	
Line 5   SV127   NOx/SO2   S/18/18 7:36   S/18/18 10:29   173   YES   173   Bypass necessary to protect plant equipment.									Bypass necessary	
Line 5   SV127   NOx/SO2   S/18/18 13:25   S/20/18 16:36   A   YES   T/3   Sypass necessary to protect plant equipment.	Line 5	SV127	NOx/SO2	5/17/18 11:07	5/17/18 11:29	22	YES	22	to protect plant	N/A
Line 5   SV127   NOx/SO2   S/18/18 7:36   S/18/18 10:28   173   YES   173   to protect plant equipment.   N/A equipment.									equipment.	
Line 5   SV127   NOx/SO2   S/18/18 7:36   S/18/18 10:28   173   YES   173   to protect plant equipment.   N/A equipment.				1					Bypass necessary	
Line 5   SV127   NOx/SO2   5/20/18 16:32   S/20/18 16:36   4   YES   4   Bypass necessary to protect plant equipment.	Line 5	SV/127	NOVISO2	5/18/18 7:36	5/18/18 10:29	173	YES	173	1 "	N/A
Line 5 SV127 NOx/SO2 5/20/18 16:32 5/20/18 16:36 4 YES 4 Bypass necessary to protect plant equipment.  Line 5 SV127 NOx/SO2 5/21/18 13:44 5/21/18 14:16 32 YES 32 Bypass necessary to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 5:36 5/26/18 5:59 23 YES 23 bypass necessary to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 8:59 5/26/18 13:19 180 YES 180 to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 8:59 5/26/18 13:19 180 YES 180 to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 13:27 5/26/18 13:43 16 YES 16 to protect plant equipment.  Line 6 SV128 NOx/SO3 5/29/18 22:32 5/29/18 22:59 28 YES 26 to protect plant equipment.  Line 7 SV129 NOx/SO4 5/30/18 9:59 5/31/18 1:18 919 YES 919 to protect plant equipment.  Line 8 SV130 NOx/SO5 6/7/18 13:39 6/7/18 19:29 350 YES 350 Expass necessary to protect plant equipment.  Line 9 SV131 NOx/SO6 6/13/18 10:08 6/13/18 14:06 238 YES 238 Typass necessary to protect plant equipment.  Bypass necessary to protect plant equipment.  N/A equipme	Line	34127	NONSOZ	07707101700	0,10,10 10.20	'''	, _ 0	1		,,,,,
Line 5 SV127 NOx/SO2 5/20/18 16:32 5/20/18 16:36 4 YES 4 to protect plant equipment.  Line 5 SV127 NOx/SO2 5/21/18 13:44 5/21/18 14:16 32 YES 32 Bypass necessary to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 5:36 5/26/18 5:59 23 YES 23 to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 5:36 5/26/18 5:59 23 YES 23 to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 8:59 5/26/18 13:19 180 YES 180 to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 13:27 5/26/18 13:43 16 YES 16 Bypass necessary to protect plant equipment.  Line 6 SV128 NOx/SO3 5/29/18 22:32 5/29/18 22:59 26 YES 26 Bypass necessary to protect plant equipment.  Line 7 SV129 NOx/SO4 5/30/18 9:59 5/31/18 1:18 919 YES 919 to protect plant equipment.  Line 8 SV130 NOx/SO5 6/7/18 13:39 6/7/18 19:29 350 YES 350 Bypass necessary to protect plant equipment.  Line 9 SV131 NOx/SO6 8/13/18 10:08 6/13/18 14:06 238 YES 238 Bypass necessary to protect plant equipment.  Line 10 SV132 NOx/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 Bypass necessary to protect plant equipment.  Bypass necessary to protect plant equipment.  N/A equipment.  N/A equipment.  N/A equipment.  Bypass necessary to protect plant to protect plant equipment.  Bypass necessary to p		1	l						<del></del>	
Line 5   SV127   NOx/SO2   5/21/18 13:44   5/21/18 14:16   32   YES   32   Bypass necessary to protect plant equipment.		0) (4.07	Nowinee	5/00/40 40:00	E (00) (4.0 4.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		VEC	, a	1	NI/A
Line 5   SV127   NOx/SO2   5/21/18 13:44   5/21/18 14:16   32   YES   32   Bypass necessary to protect plant equipment.	Line 5	50127	NUX/SUZ	5/20/18 15:32	5/20/18 15:35	4	150	<b> </b>	1	. 18/25
Line 5   SV127   NOx/SO2   5/21/18 13:44   5/21/18 14:16   32   YES   32   to protect plant equipment.   N/A equipment.			<u> </u>						<u> </u>	
Line 5   SV127   NOx/SO2   5/26/18 5:36   5/26/18 5:59   23   YES   23   Spyass necessary to protect plant equipment.   N/A equipment.										
Line 5 SV127 NOx/SO2 5/26/18 5:36 5/26/18 5:59 23 YES 23 Bypass necessary to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 8:59 5/26/18 13:19 180 YES 180 Bypass necessary to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 13:27 5/26/18 13:43 16 YES 16 Bypass necessary to protect plant equipment.  Line 6 SV128 NOx/SO3 5/29/18 22:32 5/29/18 22:59 26 YES 26 to protect plant equipment.  Line 7 SV129 NOx/SO4 5/30/18 9:59 5/31/18 1:18 919 YES 919 to protect plant equipment.  Line 8 SV130 NOx/SO5 6/7/18 13:39 6/7/18 19:29 350 YES 350 to protect plant equipment.  Line 9 SV131 NOx/SO6 6/13/18 10:08 6/13/18 14:06 238 YES 238 to protect plant equipment.  Line 10 SV132 NOx/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 Bypass necessary to protect plant equipment.  Bypass necessary to protect plant equipment.  N/A equipment.  Bypass necessary to protect plant equipmen	Line 5	SV127	NOx/SO2	5/21/18 13:44	5/21/18 14:16	32	YES	32	1 ' '	N/A
Line 5 SV127 NOx/SO2 5/26/18 5:36 5/26/18 5:59 23 YES 23 to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 8:59 5/26/18 13:19 180 YES 180 to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 13:27 5/26/18 13:43 16 YES 16 to protect plant equipment.  Line 6 SV128 NOx/SO3 5/29/18 22:32 5/29/18 22:59 26 YES 26 to protect plant equipment.  Line 7 SV129 NOx/SO4 5/30/18 9:59 5/31/18 1:18 919 YES 919 to protect plant equipment.  Line 8 SV130 NOx/SO5 6/7/18 13:39 6/7/18 19:29 350 YES 350 to protect plant equipment.  Line 9 SV131 NOx/SO6 6/13/18 10:08 6/13/18 14:06 238 YES 238 to protect plant equipment.  Bypass necessary									equipment.	
Line 5   SV127   NOx/SO2   5/26/18 8:59   5/26/18 13:19   180   YES   180   Bypass necessary to protect plant equipment.									Bypass necessary	
Line 5   SV127   NOx/SO2   5/26/18 8:59   5/26/18 13:19   180   YES   180   Bypass necessary to protect plant equipment.   N/A equipment   SV127   NOx/SO2   5/26/18 13:27   5/26/18 13:43   16   YES   16   Bypass necessary to protect plant equipment.   N/A equipment.   SV128   NOx/SO3   5/29/18 22:32   5/29/18 22:59   26   YES   26   Bypass necessary to protect plant equipment.   SV129   NOx/SO4   5/30/18 9:59   5/31/18 1:18   919   YES   919   To protect plant equipment.   SV129   NOx/SO5   6/7/18 13:39   6/7/18 19:29   350   YES   350   Bypass necessary to protect plant equipment.   SV130   NOx/SO5   6/7/18 13:39   6/7/18 19:29   350   YES   350   Bypass necessary to protect plant equipment.   SV131   NOx/SO6   6/13/18 10:08   6/13/18 14:06   238   YES   238   SV130   Bypass necessary to protect plant equipment.   SV132   NOx/SO7   6/14/18 11:56   6/14/18 12:12   16   YES   16   Bypass necessary to protect plant equipment.   Bypass necessary to protect plant equipment.   SV132   NOx/SO7   6/14/18 11:56   6/14/18 12:12   16   YES   16   Bypass necessary to protect plant equipment.   Bypass necessary to protect plant equipment.   SV132   SV132   NOx/SO7   6/14/18 11:56   6/14/18 12:12   16   YES   16   SV132   SV133   SV134   SV135	Line 5	SV127	NOx/SO2	5/26/18 5:36	5/26/18 5:59	23	YES	23	to protect plant	N/A
Line 5 SV127 NOx/SO2 5/26/18 8:59 5/26/18 13:19 180 YES 180 Bypass necessary to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 13:27 5/26/18 13:43 16 YES 16 Bypass necessary to protect plant equipment.  Line 6 SV128 NOx/SO3 5/29/18 22:32 5/29/18 22:59 26 YES 26 protect plant equipment.  Line 7 SV129 NOx/SO4 5/30/18 9:59 5/31/18 1:18 919 YES 919 Bypass necessary to protect plant equipment.  Line 8 SV130 NOx/SO5 6/7/18 13:39 6/7/18 19:29 350 YES 350 bypass necessary to protect plant equipment.  Line 9 SV131 NOx/SO6 6/13/18 10:08 6/13/18 14:06 238 YES 238 Bypass necessary to protect plant equipment.  Bypass					1				equipment.	
Line 5 SV127 NOx/SO2 5/26/18 8:59 5/26/18 13:19 180 YES 180 to protect plant equipment.  Line 5 SV127 NOx/SO2 5/26/18 13:27 5/26/18 13:43 16 YES 16 Sypass necessary to protect plant equipment.  Line 6 SV128 NOx/SO3 5/29/18 22:32 5/29/18 22:59 26 YES 26 Sypass necessary to protect plant equipment.  Line 7 SV129 NOx/SO4 5/30/18 9:59 5/31/18 1:18 919 YES 919 to protect plant equipment.  Line 8 SV130 NOx/SO5 6/7/18 13:39 6/7/18 19:29 350 YES 350 to protect plant equipment.  Line 9 SV131 NOx/SO6 6/13/18 10:08 6/13/18 14:06 238 YES 238 Typass necessary to protect plant equipment.  Line 10 SV132 NOx/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 Sypass necessary to protect plant equipment.  Bypass necessary to protect plant equipment.										
Line 5   SV127   NOx/SO2   5/26/18 13:27   5/26/18 13:43   16   YES   16   Bypass necessary to protect plant equipment.	Line	Q1/127	NOVEO2	5/26/18 8:50	6/26/18 13:19	180	YES	180		N/A
Line 5 SV127 NOx/SO2 5/26/18 13:27 5/26/18 13:43 16 YES 16 Bypass necessary to protect plant equipment.  Line 6 SV128 NOx/SO3 5/29/18 22:32 5/29/18 22:59 26 YES 26 Bypass necessary to protect plant equipment.  Line 7 SV129 NOx/SO4 5/30/18 9:59 5/31/18 1:18 919 YES 919 Bypass necessary to protect plant equipment.  Line 8 SV130 NOx/SO5 6/7/18 13:39 6/7/18 19:29 350 YES 350 Bypass necessary to protect plant equipment.  Line 9 SV131 NOx/SO6 6/13/18 10:08 6/13/18 14:06 238 YES 238 Types necessary to protect plant equipment.  Bypass necessary	Lines	37127	NOX/302	3/20/10 0.00	0/20/10 10:13	100	'-0	100	, ,	
Line 5 SV127 NOx/SO2 5/26/18 13:27 5/26/18 13:43 16 YES 16 to protect plant equipment.  Line 6 SV128 NOx/SO3 5/29/18 22:32 5/29/18 22:59 26 YES 26 to protect plant equipment.  Line 7 SV129 NOx/SO4 5/30/18 9:59 5/31/18 1:18 919 YES 919 to protect plant equipment.  Line 8 SV130 NOx/SO5 6/7/18 13:39 6/7/18 19:29 350 YES 350 Bypass necessary to protect plant equipment.  Line 9 SV131 NOx/SO6 6/13/18 10:08 6/13/18 14:06 238 YES 238 to protect plant equipment.  Line 10 SV132 NOx/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 Bypass necessary to protect plant equipment.  Bypass necessary									1	
Line 6   SV128   NOx/SO3   5/29/18 22:32   5/29/18 22:59   26   YES   26   Bypass necessary to protect plant equipment.   N/A equipment.		1			= 100110 10 10	10	VEO	1.0	, ", ·	NI/A
Line 6         SV128         NOx/SO3         5/29/18 22:32         5/29/18 22:59         26         YES         26         Bypass necessary to protect plant equipment.         N/A           Line 7         SV129         NOx/SO4         5/30/18 9:59         5/31/18 1:18         919         YES         919         Bypass necessary to protect plant equipment.         N/A           Line 8         SV130         NOx/SO5         6/71/18 13:39         6/71/18 19:29         350         YES         350         to protect plant equipment.         N/A           Line 9         SV131         NOx/SO6         6/13/18 10:08         6/13/18 14:06         238         YES         238         Bypass necessary to protect plant equipment.           Line 10         SV132         NOx/SO7         6/14/18 11:56         6/14/18 12:12         16         YES         16         Bypass necessary to protect plant equipment.           Line 10         SV132         NOx/SO7         6/14/18 11:56         6/14/18 12:12         16         YES         16         bypass necessary to protect plant equipment.	Line 5	SV127	NOx/SO2	5/26/18 13:27	5/26/18 13:43	16	YES	16		I IN/A
Line 6         SV128         NOx/SO3         5/29/18 22:32         5/29/18 22:59         26         YES         26         to protect plant equipment.         N/A           Line 7         SV129         NOx/SO4         5/30/18 9:59         5/31/18 1:18         919         YES         919         Bypass necessary to protect plant equipment.         N/A           Line 8         SV130         NOx/SO5         6/7/18 13:39         6/7/18 19:29         350         YES         350         Bypass necessary to protect plant equipment.         N/A           Line 9         SV131         NOx/SO6         6/13/18 10:08         6/13/18 14:06         238         YES         238         bypass necessary to protect plant equipment.           Line 10         SV132         NOx/SO7         6/14/18 11:56         6/14/18 12:12         16         YES         16         Bypass necessary to protect plant equipment.           Bypass necessary         Bypass necessary         N/A         Bypass necessary         N/A									· · · · · · · · · · · · · · · · · · ·	<u> </u>
Line 7   SV129   NOx/SO4   5/30/18 9:59   5/31/18 1:18   919   YES   919   to protect plant equipment.   N/A									Bypass necessary	
Line 7         SV129         NOx/SO4         5/30/18 9:59         5/31/18 1:18         919         YES         919         Bypass necessary to protect plant equipment.         N/A           Line 8         SV130         NOx/SO5         6/7/18 13:39         6/7/18 19:29         350         YES         350         Bypass necessary to protect plant equipment.         N/A           Line 9         SV131         NOx/SO6         6/13/18 10:08         6/13/18 14:06         238         YES         238         Bypass necessary to protect plant equipment.           Line 10         SV132         NOx/SO7         6/14/18 11:56         6/14/18 12:12         16         YES         16         Bypass necessary to protect plant equipment.           Bypass necessary         Bypass necessary         N/A         H/A         H/A         H/A	Line 6	SV128	NOx/SO3	5/29/18 22:32	5/29/18 22:59	26	YES	26	to protect plant	N/A
Line 7         SV129         NOx/SO4         5/30/18 9:59         5/31/18 1:18         919         YES         919         to protect plant equipment.         N/A           Line 8         SV130         NOx/SO5         6/7/18 13:39         6/7/18 19:29         350         YES         350         to protect plant equipment.         N/A           Line 9         SV131         NOx/SO6         6/13/18 10:08         6/13/18 14:06         238         YES         238         bypass necessary to protect plant equipment.         N/A           Line 10         SV132         NOx/SO7         6/14/18 11:56         6/14/18 12:12         16         YES         16         bypass necessary to protect plant equipment.         N/A           Bypass necessary         Bypass necessary         N/A         H/A         H/A         H/A			1	ļ	·				equipment.	
Eine 8   SV130   NOx/SO5   6/7/18 13:39   6/7/18 19:29   350   YES   350   Bypass necessary to protect plant equipment.									Bypass necessary	
Eine 8   SV130   NOx/SO5   6/7/18 13:39   6/7/18 19:29   350   YES   350   Bypass necessary to protect plant equipment.	Line 7	SV129	NOx/SO4	5/30/18 9:59	5/31/18 1:18	919	YES	919	to protect plant	N/A
Line 8         SV130         NOx/SO5         6/7/18 13:39         6/7/18 19:29         350         YES         350         Bypass necessary to protect plant equipment.         N/A           Line 9         SV131         NOx/SO6         6/13/18 10:08         6/13/18 14:06         238         YES         238         Bypass necessary to protect plant equipment.         N/A           Line 10         SV132         NOx/SO7         6/14/18 11:56         6/14/18 12:12         16         YES         16         Bypass necessary to protect plant equipment.         N/A           Bypass necessary         Bypass necessary         N/A         Hypass necessary         N/A									equipment.	
Line 8         SV130         NOx/SO5         6/7/18 13:39         6/7/18 19:29         350         YES         350         to protect plant equipment.         N/A           Line 9         SV131         NOx/SO6         6/13/18 10:08         6/13/18 14:06         238         YES         238         Bypass necessary to protect plant equipment.           Line 10         SV132         NOx/SO7         6/14/18 11:56         6/14/18 12:12         16         YES         16         Bypass necessary to protect plant equipment.           Bypass necessary         Bypass necessary         N/A         Hypass necessary         N/A	-								· · · · · · · · · · · · · · · · · · ·	
Line 9 SV131 NOx/SO6 6/13/18 10:08 6/13/18 14:06 238 YES 238 to protect plant equipment.  Line 10 SV132 NOx/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 to protect plant equipment.  Bypass necessary  N/A	lino 0	61/120	NOVISOR	6/7/18 13:30	6/7/18 10:20	350	YES	350	1 "	N/A
Line 9         SV131         NOx/SO6         6/13/18 10:08         6/13/18 14:06         238         YES         238         Bypass necessary to protect plant equipment.         N/A           Line 10         SV132         NOx/SO7         6/14/18 11:56         6/14/18 12:12         16         YES         16         Bypass necessary to protect plant equipment.         N/A equipment.           Bypass necessary         Bypass necessary         N/A         Bypass necessary         N/A	Lineo	3 7 130	NOXISOS	0///10 13.39	0///10/19.29	350	120	1 220	1 ' '	'"'
Line 9         SV131         NOx/SO6         6/13/18 10:08         6/13/18 14:06         238         YES         238         to protect plant equipment.         N/A           Line 10         SV132         NOx/SO7         6/14/18 11:56         6/14/18 12:12         16         YES         16         to protect plant equipment.         N/A           Bypass necessary equipment.         Bypass necessary         N/A         Bypass necessary         N/A						<del> </del>				
Line 10   SV132   NOx/SO7   6/14/18 11:56   6/14/18 12:12   16   YES   16   to protect plant equipment.	l				04040445	200	\ \v_=0	220	}	NIA
Line 10 SV132 NOx/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 Bypass necessary to protect plant equipment.  Bypass necessary to protect plant equipment.  Bypass necessary	Line 9	SV131	NOX/SO6	6/13/18 10:08	6/13/18 14:06	238	I YES	238	4	19/74
Line 10 SV132 NOx/SO7 6/14/18 11:56 6/14/18 12:12 16 YES 16 to protect plant equipment.  Bypass necessary									<del>' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' </del>	
equipment.  Bypass necessary										
Bypass necessary	Line 10	SV132	NOx/SO7	6/14/18 11:56	6/14/18 12:12	16	YES	16		N/A
A Constitution of the contract									equipment.	
The second second purposed of the second sec									Bypass necessary	1
Line 11   SV133   NOx/SO8   6/15/18 10:32   6/15/18 10:36   4   YES   4   to protect plant   N/A	Line 11	SV133	NOx/SO8	6/15/18 10:32	6/15/18 10:36	4	YES	4	to protect plant	N/A
equipment.			1					1	equipment.	]
Bypass necessary				<del> </del>				<u> </u>		
Line 12 SV134 NOx/SO9 6/18/18 1:08 6/18/18 4:41 213 YES 213 to protect plant N/A	Line 12	SV134	NOVISOR	6/18/18 1:08	6/18/18 4:41	213	YES	213		N/A
equipment.		07107	100000	0.70.70 1.00	3,13,10,1.71	,		-^-		
Bypass necessary					1	+	l	1		
		0.405	No./coac	0/05/40 47:04	BIDEI40 47:47	10	VEC	1.6		NI/A
Line 13 SV135 N0x/SO10 6/25/18 17:01 6/25/18 17:17 16 YES 16 to protect plant N/A equipment.	Line 13	50135	NOXISO10	01/20118 17:01	0/20/10 1/:1/	16	1 150	10	1 ' '	17/7
		ļ			-			<del> </del>		
Bypass necessary		1			1	1		1	1 **	
Line 14 SV136 NOx/SO11 6/26/18 15:47 6/26/18 16:01 14 YES 14 to protect plant N/A	Line 14	SV136	NOx/S011	6/26/18 15:47	6/26/18 16:01	14	YES	14	1 '	N/A
equipment.				]		<u> </u>	ļ		equipment.	
Bypass necessary									Bypass necessary	
Line 15 SV137 NOx/SO12 6/26/18 16:03 6/26/18 16:13 10 YES 10 to protect plant N/A	Line 15	SV137	NOx/SO12	6/26/18 16:03	6/26/18 16:13	10	YES	10	1 "	N/A
equipment.				1					1 '	1
Bypass necessary	<u> </u>	<del>                                     </del>	<del> </del>	<u> </u>	<u> </u>	-				<del> </del>
	Line 46	67/430	NOVIGO12	8/27/19 16:08	6/27/19 16:47	42	YES	42		N/A
Line 16 SV138 NOx/SO13 6/27/18 16:05 6/27/18 16:47 42 YES 42 to protect plant N/A equipment.	Line to	3 1 1 3 0	INONSOIS	3/2//10 10:03	0121710 10.41	-TE	,	1 -12	1 '	'*''
	L				.L	L	<u> </u>	L	equipment.	

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system See Minn. R. 7017.1110 subp. 2c

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 17	SV139	NOx/SO14	6/29/18 2:48	6/29/18 3:50	62	YES	62	Bypass necessary to protect plant equipment.	N/A
Line 18	SV140	NOx/SO15	6/29/18 7:38	6/29/18 10:03	145	YES	145	Bypass necessary to protect plant equipment.	N/A
Line 19	SV141	NOx/SO16	6/29/18 14:07	6/29/18 14:55	48	YES	48	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/1/18 20:28	4/1/18 21:02	34	YES	34	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/2/18 1:56	4/2/18 2:22	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/2/18 15:44	4/2/18 16:09	24	YES	24	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/3/18 3:06	4/3/18 3:32	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/3/18 21:51	4/3/18 22:21	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/5/18 7:33	4/5/18 13:08	335	YES	335	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/6/18 10:50	4/6/18 11:23	32	YES	32	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/7/18 8:11	4/7/18 8:44	32	YES	32	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/7/18 9:30	4/7/18 9:44	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/11/18 0:48	4/11/18 1:04	16	YES	16	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/14/18 17:37	4/14/18 19:20	102	YES	102	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/17/18 10:11	4/17/18 10:21	10	YE\$	10	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/28/18 4:50	4/28/18 5:35	44	YES	44	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/30/18 5:41	4/30/18 6:37	56	YES	56	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/30/18 9:03	4/30/18 9:21	18	YES	18	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/30/18 9:54	4/30/18 10:20	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	4/30/18 10:26	4/30/18 10:48	22	YES	22	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system See Minn. R. 7017.1110 subp. 2c

Sept										
Monthor   Periteben Unit   Periteben   P	5a)	5b)	5c)	5d)	5e)		· · · · · · · · · · · · · · · · · · ·		5í)	
ID	Monitor	Emission Unit	Pollutant and	Beginning Date	End date and			1	Reason for monitor	
Nontrored   Nontrored   No   No   Montrored   No   No   No   No   No   No   No   N								1		
Line 6   SV144								1		
Line 6   SV144	Tidinboi	Monitorea			F	(minutes)	period?	bypass		comments)
Line 6   SV144   NOwSO2   4/30/18 11:23   4/30/18 11:35   12   YES   12   Bypasa necessary to protect plant outprotect plan										
Line 6   SV144   NOwSO2   AfSW18 11:23   AfSW18 11:35   12   YES   12   Dypasa nacessary by the equipment of protect plant equipment. N/A equipment.	Line 6	SV144	NOx/SO2	4/30/18 10:54	4/30/18 11:19	24	YES	24		N/A
Line 6   SV144		1							equipment.	
Line 6 SV144 NOwSO2 5/2/18 4:39 5/2/18 4:53 14 YES 14 Bypass necessary to protect plant equipment.  Line 6 SV144 NOwSO2 5/3/18 10:39 5/3/18 10:46 6 YES 6 to protect plant equipment.  Line 6 SV144 NOwSO2 5/8/18 22:32 5/3/18 10:45 6 YES 26 TUES 26 to protect plant equipment.  Line 6 SV144 NOwSO2 5/8/18 25:39 5/3/18 10:45 724 YES 724 to protect plant equipment.  Line 6 SV144 NOwSO2 5/8/18 25:31 5/9/18 21:03 724 YES 724 to protect plant equipment.  Line 6 SV144 NOwSO2 5/8/18 13:31 5/9/18 21:41 10 YES 10 Bypass necessary to protect plant equipment.  Line 6 SV144 NOwSO2 5/14/18 21:09 5/14/18 21:29 20 YES 20 Bypass necessary to protect plant equipment.  Line 6 SV144 NOwSO2 5/14/18 21:09 5/14/18 21:29 20 YES 20 Bypass necessary to protect plant equipment.  Line 6 SV144 NOwSO2 5/14/18 21:09 5/14/18 21:29 20 YES 20 Bypass necessary to protect plant equipment.  Line 6 SV144 NOwSO2 5/14/18 21:09 5/14/18 21:29 20 YES 20 Bypass necessary to protect plant equipment.  Line 6 SV144 NOwSO2 5/14/18 21:09 5/14/18 21:29 20 YES 20 Bypass necessary to protect plant equipment.  Line 6 SV144 NOwSO2 5/14/18 12:09 5/14/18 18:36 166 YES 16 to protect plant equipment.  Line 6 SV144 NOwSO2 5/14/18 12:49 5/14/18 18:36 166 YES 16 to protect plant equipment.  Line 6 SV144 NOwSO2 5/14/18 13:39 5/15/18 15:30 167 YES 16 to protect plant equipment.  Line 6 SV144 NOwSO2 5/14/18 13:59 5/15/18 15:10 15!1 YES 16 to protect plant equipment.  Line 6 SV144 NowSO2 6/14/18 13:59 5/15/18 15:10 15!1 YES 15!1 Expressessary to protect plant equipment.  Line 6 SV144 NowSO2 6/14/18 13:59 5/15/18 15:10 15!1 YES 15!1 Express necessary to protect plant equipment.  Line 6 SV144 NowSO2 6/14/18 13:59 5/15/18 15:10 15!1 YES 15!1 Express necessary to protect plant equipment.  Line 6 SV144 NowSO2 6/14/18 13:59 5/15/18 15:10 15!1 YES 15!1 Express necessary to protect plant equipment.  Line 6 SV144 NowSO2 6/14/18 13:59 5/15/18 11:27 20 YES 20 Bypass necessary to protect plant equipment.  Line 6 SV144 NowSO2 6/14/18 13:10 6/15/18 11:30 9/15/18 11:30 9/15/18 11:30 9/15/18 11									Bypass necessary	
Line 6   SV144   NOwSO2   S7218 4.39   S7218 4.53   14   YES   14   Sypas necessary to protect plant equipment.   N/A equip	Line 6	SV144	NOx/SO2	4/30/18 11:23	4/30/18 11:35	12	YES	12	to protect plant	N/A
Line 6   SV144   NOx/SO2   5/2/18 4:39   5/2/18 4:53   14   YES   14   10 protect plant equipment.   N/A e									equipment.	
Line 6 SV144 NOX/SO2 5/8/18 22:32 5/8/18 22:59 28 YES 26 Bypass necessary to protect plant equipment.  Line 6 SV144 NOX/SO2 5/8/18 22:32 5/8/18 22:59 28 YES 26 protect plant equipment.  Line 6 SV144 NOX/SO2 5/8/18 22:31 5/8/18 21:03 724 YES 724 protect plant equipment.  Line 6 SV144 NOX/SO2 5/8/18 22:31 5/8/18 21:41 10 YES 10 protect plant equipment.  Line 6 SV144 NOX/SO2 5/10/18 13:28 5/10/18 13:34 6 YES 6 protect plant equipment.  Line 6 SV144 NOX/SO2 5/10/18 13:28 5/10/18 13:34 6 YES 6 protect plant equipment.  Line 6 SV144 NOX/SO2 5/10/18 13:29 5/14/18 21:29 20 YES 20 group expected plant equipment.  Line 6 SV144 NOX/SO2 5/21/18 17:30 5/21/18 18:19 48 YES 48 group expected plant equipment.  Line 6 SV144 NOX/SO2 5/24/18 12:49 5/24/18 15:36 186 YES 166 group expected plant equipment.  Line 6 SV144 NOX/SO2 5/30/18 17:17 5/30/18 17:33 16 YES 16 group expected plant equipment.  Line 6 SV144 NOX/SO2 6/10/18 23:33 8/11/18 0.59 85 YES 86 grossesary to protect plant equipment.  Line 6 SV144 NOX/SO2 6/10/18 23:33 8/11/18 0.59 85 YES 95 85 grossesary to protect plant equipment.  Line 6 SV144 NOX/SO2 6/10/18 23:33 8/11/18 0.59 85 YES 95 85 grossesary to protect plant equipment.  Line 6 SV144 NOX/SO2 6/10/18 23:33 8/11/18 0.59 85 YES 95 95 95 95 95 95 95 95 95 95 95 95 95				-					Bypass necessary	
Line 6   SV144   NOx/SO2   S/8/18 10:39   S/3/18 10:45   6   YES   6   Suppose necessary to protect plant equipment.   N/A equipment   N/A e	Line 6	SV144	NOx/SO2	5/2/18 4:39	5/2/18 4:53	14	YES	14	to protect plant	N/A
Line 6   SV144   NOx/SO2   S/8/18 22:32   S/8/18 22:59   26   YES   26   equipment   N/A equipment   SV144   NOx/SO2   S/8/18 22:32   S/8/18 22:59   26   YES   26   equipment   SV144   NOx/SO2   S/8/18 22:32   S/8/18 22:59   26   YES   26   equipment   SV144   NOx/SO2   S/8/18 21:31   S/9/18 21:03   724   YES   724   equipment   N/A equipment   SV144   NOx/SO2   S/8/18 21:31   S/9/18 21:41   10   YES   10   Equipment   SV144   NOx/SO2   S/8/18 21:31   S/9/18 21:41   10   YES   10   Equipment   SV144   NOx/SO2   S/18/18 21:32   S/10/18 13:34   6   YES   6   equipment   SV144   NOx/SO2   S/14/18 21:09   S/14/18 21:29   20   YES   20   Equipment   SV144   NOx/SO2   S/24/18 12:30   S/24/18 18:36   166   YES   168   Equipment   SV144   NOx/SO2   S/24/18 12:49   S/24/18 18:36   166   YES   168   Equipment   SV144   NOx/SO2   S/24/18 12:49   S/24/18 18:36   166   YES   168   Equipment   SV144   NOx/SO2   S/39/18 17:17   S/39/18 17:33   16   YES   16   Equipment   SV144   NOx/SO2   S/39/18 17:17   S/39/18 17:33   16   YES   16   Equipment   SV144   NOx/SO2   S/14/18 18:39   S/14/18 0.59   85   YES   85   Equipment   SV144   NOx/SO2   S/14/18 18:39   S/14/18 0.59   85   YES   S/44									equipment.	
Line 6   SV144   NOx/SO2   S/8/18 22:32   S/8/18 22:59   26   YES   26   equipment   N/A equipment   SV144   NOx/SO2   S/8/18 22:32   S/8/18 22:59   26   YES   26   equipment   SV144   NOx/SO2   S/8/18 22:32   S/8/18 22:59   26   YES   26   equipment   SV144   NOx/SO2   S/8/18 21:31   S/9/18 21:03   724   YES   724   equipment   N/A equipment   SV144   NOx/SO2   S/8/18 21:31   S/9/18 21:41   10   YES   10   Equipment   SV144   NOx/SO2   S/8/18 21:31   S/9/18 21:41   10   YES   10   Equipment   SV144   NOx/SO2   S/18/18 21:32   S/10/18 13:34   6   YES   6   equipment   SV144   NOx/SO2   S/14/18 21:09   S/14/18 21:29   20   YES   20   Equipment   SV144   NOx/SO2   S/24/18 12:30   S/24/18 18:36   166   YES   168   Equipment   SV144   NOx/SO2   S/24/18 12:49   S/24/18 18:36   166   YES   168   Equipment   SV144   NOx/SO2   S/24/18 12:49   S/24/18 18:36   166   YES   168   Equipment   SV144   NOx/SO2   S/39/18 17:17   S/39/18 17:33   16   YES   16   Equipment   SV144   NOx/SO2   S/39/18 17:17   S/39/18 17:33   16   YES   16   Equipment   SV144   NOx/SO2   S/14/18 18:39   S/14/18 0.59   85   YES   85   Equipment   SV144   NOx/SO2   S/14/18 18:39   S/14/18 0.59   85   YES   S/44									Bypass necessary	
Line 6 SV144 NOx/SO2 5/8/18 22:32 5/8/18 22:59 26 YES 26 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/9/18 8:59 5/9/18 21:03 724 YES 724 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/8/18 21:31 5/9/18 21:41 10 YES 10 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/14/18 12:32 5/10/18 13:34 6 YES 6 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/14/18 21:09 5/14/18 21:29 20 YES 20 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/14/18 17:30 5/24/18 18:19 48 YES 48 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/24/18 17:30 5/24/18 16:36 166 YES 166 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/24/18 17:37 5/30/18 17:33 16 YES 166 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/30/18 17:17 5/30/18 17:33 16 YES 166 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 23:33 6/11/18 0:59 65 YES 16 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 23:33 6/11/18 0:59 65 YES 16 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 23:33 6/11/18 0:59 65 YES 16 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 23:33 6/11/18 0:59 65 YES 85 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 13:39 6/11/18 0:59 7ES 20 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 13:39 6/11/18 0:59 7ES 20 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 13:39 6/25/18 11:30 FYES 22 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 13:39 6/25/18 11:39 FYES 6 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 13:39 6/25/18 11:39 FYES 6 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/26/18 11:38 6/25/18 11:44 6 YES 6 Sypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/26/18 11:39 6/25/18 11:49 6/25/18 11:49 FYES 6 Sypass	Line 6	S\/144	NOVISO2	5/3/18 10:39	5/3/18 10:45	6	YES	6		l n/a l
Line 6   SV144	LINCO	07144	1102002	0,0,10,10,00						
Line 6 SV144 NOx/SO2 5/8/18 22:32 5/8/18 22:59 28 YES 26 to protect plant equipment.  Line 6 SV144 NOx/SO2 5/9/18 8:59 5/9/18 21:03 724 YES 724 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/9/18 13:28 5/10/18 13:34 6 YES 10 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/10/18 13:28 5/10/18 13:34 6 YES 6 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/14/18 21:09 5/14/18 21:29 20 YES 20 to protect plant equipment.  Line 6 SV144 NOx/SO2 5/24/18 12:49 5/24/18 15:36 166 YES 166 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/24/18 12:49 5/24/18 15:36 166 YES 166 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/30/18 17:17 5/30/18 17:33 16 YES 16 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/30/18 17:17 5/30/18 17:33 16 YES 16 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 23:33 6/11/18 0:59 85 YES 85 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 23:33 6/11/18 0:59 85 YES 85 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 23:33 6/11/18 0:59 85 YES 85 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 23:33 6/11/18 0:59 85 YES 85 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/20/18 12:10 6/20/18 13:04 7ES 22 YES 20 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/20/18 12:10 6/20/18 13:04 7ES 22 YES 22 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/20/18 11:10 6/20/18 13:04 7ES 6 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/20/18 11:10 6/20/18 13:04 7ES 6 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/20/18 11:10 6/20/18 13:04 7ES 6 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/20/18 11:10 6/20/18 13:04 7ES 6 Bypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/20/18 11:10 6/20/18 13:04 7ES 6 Bypass necessary to protect plant equipment.										
Line 6   SV144	ling C	0)/1/4	NOVICOS	E19/48 22:32	5/9/19 22:50	26	VES	26		N/A
Line 6   SV144	Lille 6	37144	NOXISO2	3/0/10 22.32	3/0/10 22.38	20	120			1,117
Line 6   SV144			<u> </u>	·		ļ				
Line 6 SV144 NOx/SO2 5/9/18 21:31 5/9/18 21:41 10 YES 10 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/10/18 13:28 5/10/18 13:34 6 YES 6 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/10/18 21:09 5/14/18 21:29 20 YES 20 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/14/18 21:09 5/14/18 21:29 20 YES 20 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/21/18 17:30 5/21/18 18:19 48 YES 48 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/24/18 12:49 5/24/18 15:36 166 YES 166 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 5/30/18 17:17 5/30/18 17:33 16 YES 16 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 23:33 6/11/18 0:59 85 YES 85 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/10/18 23:33 6/15/18 15:10 1511 YES 1511 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/19/18 9:28 6/15/18 15:10 1511 YES 1511 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/19/18 9:28 6/15/18 15:10 1511 YES 1511 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/19/18 9:28 6/15/18 11:27 20 YES 20 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/20/18 12:10 6/20/18 13:04 54 YES 54 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/25/18 11:14 6/25/18 11:36 22 YES 22 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/25/18 11:14 6/25/18 11:36 22 YES 22 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/25/18 11:14 6/25/18 11:36 22 YES 22 Eypass necessary to protect plant equipment.  Line 6 SV144 NOx/SO2 6/25/18 11:10 6/25/18 11:29 88 YES 88 to protect plant equipment.		01/4/4	NO. (000	5/0/40 0.50	E 10 14 0 04 00	704	VEC	704		N/A
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Line 6   SV144   NOx/SO2   5/10/18 13:28   5/10/18 13:34   6   YES   6   Bypass necessary to protect plant equipment.   SV144   NOx/SO2   5/14/18 21:09   5/14/18 21:29   20   YES   20   to protect plant equipment.   SV144   NOx/SO2   5/21/18 17:30   S/21/18 18:19   48   YES   48   Bypass necessary to protect plant equipment.   SV144   NOx/SO2   5/21/18 12:49   5/24/18 15:36   166   YES   166   Bypass necessary to protect plant equipment.   SV144   NOx/SO2   5/20/18 17:17   5/30/18 17:33   16   YES   16   Bypass necessary to protect plant equipment.   SV144   NOx/SO2   5/30/18 17:17   5/30/18 17:33   16   YES   16   to protect plant equipment.   SV144   NOx/SO2   S/10/18 23:33   S/11/18 0:59   85   YES   85   to protect plant equipment.   SV144   NOx/SO2   S/10/18 13:59   S/15/18 15:10   1511   YES   1511   SV144   SV144   NOx/SO2   S/10/18 13:28   S/15/18 15:10   1511   YES   1511   SV144   SV144   NOx/SO2   S/20/18 10:37   S/20/18 11:27   20   YES   20   SV144   SV144   NOx/SO2   S/20/18 10:37   S/20/18 11:27   20   YES   20   SV144   SV144   NOx/SO2   S/20/18 10:37   S/20/18 11:36   Z2   YES   Z2   SV144   SV144   NOx/SO2   S/20/18 11:14   S/25/18 11:36   Z2   YES   Z2   SV144   SV144   NOx/SO2   S/25/18 11:14   S/25/18 11:36   Z2   YES   Z2   SV144   SV144   NOx/SO2   S/25/18 11:38   S/25/18 11:44   SV15/18 11:46   SV144   NOx/SO2   S/25/18 11:38   S/25/18 11:44   SV15/18   SV15/1	Line 6	SV144	NOx/SO2	5/9/18 21:31	5/9/18 21:41	10	YES	10		IV/A
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Line 6         SV144         NOx/SO2         5/24/18 12:49         5/24/18 15:36         166         YES         166         to protect plant equipment.         N/A           Line 6         SV144         NOx/SO2         5/30/18 17:17         5/30/18 17:33         16         YES         16         to protect plant equipment.         N/A           Line 6         SV144         NOx/SO2         6/10/18 23:33         6/11/18 0:59         85         YES         85         to protect plant equipment.         N/A           Line 6         SV144         NOx/SO2         6/14/18 13:59         6/15/18 15:10         1511         YES         1511         bypass necessary to protect plant equipment.         N/A           Line 6         SV144         NOx/SO2         6/19/18 9:28         6/19/18 10:37         68         YES         68         Bypass necessary to protect plant equipment.         N/A           Line 6         SV144         NOx/SO2         6/20/18 10:37         6/20/18 11:27         20         YES         20         Bypass necessary to protect plant equipment.         N/A           Line 6         SV144         NOx/SO2         6/20/18 12:10         6/20/18 13:04         54         YES         54         to protect plant equipment.         N/A           Line 6 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>ļ</td> <td>equipment.</td> <td></td>								ļ	equipment.	
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equipment.	Line 6	SV144	NOx/SO2	6/26/18 11:00	6/26/18 12:29	88	YES	88		N/A
				1		<u> </u>	<u></u>	1	equipment.	

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system See Minn. R. 7017.1110 subp. 2c

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 6	SV144	NOx/SO2	6/29/18 7:38	6/29/18 10:14	175	YES	175	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	6/29/18 10:58	6/29/18 11:02	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/7/18 8:05	4/7/18 9:20	74	YES	74	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/8/18 2:47	4/8/18 5:04	137	YES	137	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/8/18 20:12	4/8/18 21:39	87	YES	87	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/18/18 14:14	4/18/18 15:04	50	YES	50	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/20/18 13:49	4/20/18 14:48	58	YES	58	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/29/18 20:38	4/29/18 21:37	58	YES	58	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	4/30/18 11:06	4/30/18 11:55	48	YES	48	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/1/18 10:54	5/1/18 12:10	76	YES	76	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/1/18 22:37	5/1/18 23:59	81	YES	81	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/2/18 8:59	5/2/18 21:04	725	YES	725	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/3/18 6:22	5/3/18 9:30	187	YES	187	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/3/18 10:26	5/3/18 11:15	48	YES	48	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/3/18 12:05	5/3/18 12:26	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/15/18 6:06	5/15/18 18:15	728	YES	728	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	5/15/18 18:54	5/15/18 19:10	16	YES	16	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/10/18 19:55	6/10/18 20:09	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/10/18 21:12	6/10/18 21:20	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/10/18 22:33	6/10/18 22:59	25	YES	25	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system See Minn. R. 7017.1110 subp. 2c

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 7	SV151	NOx/SO2	6/14/18 17:59	6/15/18 17:51	1432	YES	1432	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/15/18 18:05	6/15/18 18:09	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/16/18 13:21	6/16/18 13:39	18	YES	18	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/18/18 13:28	6/18/18 13:53	24	YES	24	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/26/18 7:18	6/26/18 8:45	86	YES	86	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/26/18 11:04	6/26/18 12:07	62	YES	62	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	6/27/18 17:03	6/27/18 17:54	50	YES	50	Bypass necessary to protect plant equipment.	N/A
								<b></b>	.,
					ACCEPTANCE OF THE PARTY OF THE		****		
	L		5k) Total (	l duration of allov	! vable monito	r bypass:	346	hours	J

#### 6) CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

James Sauce	Lawrence Sutherland
Signature of Responsible Official	Printed Name of Responsible Official
General Manager - Minnesota Ore Operations	July 27, 2018
Title	Date

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Subject item	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A								
Cylinder	Cylinder gas audit's (CGA)	(CGA)						
Emission	Operating			Last audit			Next test	
unit	hours	Monitor ID	Pollutant	date	Cal error results	Pass/fail	due by:	Comments
					Low 1.9%			
SV103		MR001	NOx	2/22/2018	Mid 1.6% Pass	Pass	9/30/2018	RATA 2nd Qtr
					Low -1.3%			
SV118		MR002	XON	2/22/2018	Mid -0.3% Pass	Pass	9/30/2018	RATA 2nd Qtr
					Low 2.6%			
SV127		MR003	NOx	2/22/2018	Mid 1.9% Pass	Pass	9/30/2018	RATA 2nd Qtr
					Low -0.1%			
SV144		MR004	NOx	2/22/2018	Mid 0.7% Pass	Pass	9/30/2018	RATA 2nd Qtr
					Low 3.4%			
SV151		MR005	NOx	2/22/2018	Mid 2.7% Pass	Pass	9/30/2018	RATA 2nd Qtr
					Low -0.8%			
SV103		MR001	S02	2/22/2018	Mid 2.3% Pass	Pass	9/30/2018	RATA 2nd Qtr
2.2		000	C ()	0,000,000	Low -2.8%		0/00/00/0	7+0 by 6 4+4 0
2V     0		INIKUUZ	305	2/22/2010	WILC 0.170	000L	3/30/2010	UNITA LINA
SV127		MR003	802	2/22/2018	Low -2.8%     Mid 1.5%   Pass	Pass	9/30/2018	RATA 2nd Qtr
					Low -4.7%			
SV144		MR004	802	2/22/2018	Mid -1.8% Pass	Pass	9/30/2018	RATA 2nd Qtr
					Low -3.3%		·	
SV151		MR005	802	2/22/2018	Mid 1.0% Pass	Pass	9/30/2018	RATA 2nd Qtr
	·							
Linearity								IIIIIIIAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
Emission	Operating			Last audit			Next test	
unit	hours	Monitor ID	Pollutant	date	Cal error results	Pass/fail	due by:	Comments
					Low			

N/A					Mid			
ative	accuracy test audit (RATA)	st audit (R	ATA)					
Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Relative accuracy	Pass/fail	Next test due by:	Comments
SV103		MR001	802	5/21/2018	2.5%	Pass	2nd Qtr 2019	
SV103		MR001	NOx	5/21/2018	9.5%		2nd Qtr 2019	
SV118		MR002	SO2	5/17/2018	2.9%	Pass	2nd Qtr 2019	
SV118		MR002	NOx	5/17/2018	1.7%	Pass	2nd Qtr 2019	
SV127		MR003	802	5/16/2018	13.2%		2nd Qtr 2019	
SV127		MR003	NOx	5/16/2018	13.3%		2nd Qtr 2019	
SV144		MR004	802	5/22/2018	6.0%	Pass	2nd Qtr 2019	
SV144		MR004	NOx	5/22/2018	13.2%	Pass	2nd Qtr 2019	
SV151		MR005	802	5/23/2018	8.2%	Pass	2nd Qtr 2019	
SV151		MR005	NOx	5/23/2018	10.3%	Pass	2nd Qtr 2019	
			-					

U. S. Steel Corporation Minntac Mountain Iron, Minnesota

TABLE 1

### RATA RESULTS SUMMARY Line 3 Waste Gas Stack (SV103) May 21, 2018

Sulfur Dioxide Emission Rate Relative	e Accuracy - Calculated Using the Reference Method Average	alculated Us	ing the Refere	nce Method /	\verage	Relative Accuracy Limit	uracy Limit		20%
म्बास ८०	Run 1	Run 2	Run 3	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10
302, 121111	0735-0756	0825-0846	0901-0922	1023-1044	1058-1119		1133-1154   1210-1231   1244-1305	1244-1305	1335-1356
Ref. Method lb/hr	95.3	80.9	98.5	87.2	0.76	86.5	88.2	100.4	83.9
CEM lb/hr	91.5	∴78,9	98'6	67.9	0.66	87.5	91.1	102.2	86.2
Difference	-3.8	-2.0	0.1	0.7	2.0	1.0	2.9	1.8	2.3
Average Difference	0.5	Standard Dev	Standard Deviation of the Differences	fferences	2.2	Relative Accuracy	uracy		2.5%
Confidence Coefficient	1.7	Average Refe	Average Reference Method, lb/hr	lb/hr	6:06	Average CEM, lb/hr	í, íb/hr		91.4

Oxides of Nitrogen Emission Rate Relative Accuracy - Calculated Using the Reference Method Average	tive Accuracy	- Calculated l	Jsing the Ref	erence Metho	d Average	Relative Accuracy Limit	uracy Limit		70%
valatiOla	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 9	Run 10
WAY TOWN	0735-0756	0825-0846	0901-0922	0937-0958	1023-1044	1058-1119	1058-1119   1133-1154	1244-1305	1335-1356
Ref. Method lb/hr	163.8	145.8	206.2	198.6	208.8	176.1	176.8	189.3	175.3
CEM lb/hr	173.5	157.5	225.2	206.3	225.5	193.8	190.6	207.4	189.1
Difference	9.7	11.7	19.0	7.7	16.7	17.7	13.8	18.1	13.7
Average Difference	14.2	Standard Deviation of the Differences	iation of the Di	fferences	4.0	Relative Accuracy	uracy		9.5%
Confidence Coefficient	3.0	Average Reference Method, lb/hr	rence Method,	lb/hr	182.3	182.3 Average CEM, lb/hr	i, Ib/hr		196.5

Barr Engineering Co. June 26, 2018

U. S. Steel Corporation Minntac Mountain Iron, Minnesota

**TABLE 2** 

# RATA RESULTS SUMMARY Line 4 Waste Gas Stack (SV118) May 17, 2018

Sulfur Dioxide Emission Rate Relative Accuracy - Calculated Using the Reference Method Average	ve Accuracy - I	Calculated Usi	ing the Refere	nce Method /	Average	Relative Accuracy Limit	uracy Limit		20%
: 17 H	Run 1	Run 2	Run 3	Run 4	Run 5	Run 7	Run 8	Run 9	Run 10
SO <sub>22</sub> IB/III	942-1003	1014-1035	1014-1035 1045-1106 1154-1215 1226-1247	1154-1215	1226-1247	1358-1419	1429-1450	1358-1419 1429-1450 1502-1523	1533-1554
Ref. Method lb/hr	54.1	55.8	61.1	68.7	78.2	88.1	75.9	65.4	73.6
CEM lb/hr	54.0	53.8	9.09	69,4	78.7	88.9	72.9	64.9	70.4
Difference	-0.1	-2.0	-0.5	0.7	0.5	0.8	-3.0	-0.5	-3.2
Average Difference	-0.8	Standard Devi	Standard Deviation of the Differences	ferences	1.6	Relative Accuracy	uracy		2.9%
Confidence Coefficient	1.2	Average Refe	Average Reference Method, lb/hr	lb/hr	69.0	Average CEM, lb/hr	I, lb/hr		67.9

Oxides of Nitrogen Emission Rate Relative Accu	tive Accuracy	racy - Calculated Using the Reference Method Average	Jsing the Ref	erence Metho		Relative Accuracy Limit	uracy Limit		20%
N. P. P. P.	Run 1	Run 2	Run 3	Run 4	Run 5	Run 7	Run 8	Run 9	Run 10
NO <sub>X</sub> , ID/III	942-1003	1014-1035	1045-1106	1154-1215	1226-1247	1014-1035 1045-1106 1154-1215 1226-1247 1358-1419 1429-1450 1502-1523	1429-1450	1502-1523	1533-1554
Ref. Method lb/hr	202.3	206.0	215.6	208.9	236.7	217.5	203.2	180.5	195.8
CEM Ib/hr	205.2	207.8	216,8	214.1	238.6	221.9	196.8	176.3	194.4
Difference	2.9	1.8	1.2	5.2	1.9	4.4	÷6.4	-4.2	-1.4
Average Difference	9.0	Standard Dev	Standard Deviation of the Differences	fferences	3.9	Relative Accuracy	uracy		1.7%
Confidence Coefficient	3.0	Average Refe	Average Reference Method, lb/hr	lb/hr	207.4	Average CEM, lb/hr	I, lb/hr		209.4

TABLE 3

# RATA RESULTS SUMMARY Line 5 Waste Gas Stack (SV127) May 16, 2018

Sulfur Dioxide Emission Rate Relative Accuracy	re Accuracy - (	- Calculated Using the Reference Method Average	ing the Refere	ence Method	Average	Relative Accuracy Limit	uracy Limit		20%
Al OS	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10
2023 127111	1148-1213	1225-1246	1300-1321	1333-1354	1406-1427	1439-1500 1511-1532	1511-1532	1545-1606	1618-1639
Ref. Method lb/hr	64.1	2.73	6.09	60.7	58.8	65.8	61.6	67.1	60.1
CEM Ib/hr	64.2	59.4	60.1	60.3	56.5	59.7	53.1	55.4	49.3
Difference	0.1	1.7	-0.8	40,4	-2.3	-6.1	-8.5	-11.7	-10.8
Average Difference	-4.3	Standard Deviation of the Differences	ation of the Di	fferences	۲. ۲.	Relative Accuracy	uracy		13.2%
Confidence Coefficient	3.9	Average Reference Method, lb/hr	rence Method,	lb/hr	61.9	Average CEM, lb/hr	I, lb/hr		57.6

Oxides of Nitrogen Emission Rate Relative Accuracy - Calculated Using the Reference Method Average	tive Accuracy	- Cafculated I	Jsing the Refe	rence Metho	d Average	Relative Accuracy Limit	uracy Limit		20%
14) dl . ON	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10
WCX, tON	1148-1213	1225-1246	1300-1321	1333-1354	1406-1427	1439-1500	1511-1532	1545-1606	1618-1639
Ref. Method lb/hr	309.0	297.0	330.3	318.8	304.5	312.4	301.1	311.0	292.8
CEM lb/hr .	350.8	339.3	368.9	362.2	342.9	342.9	329.5	329.6	318.1
Difference	41.8	42.3	38.6	43.4	38.4	30.5	28.4	18.6	25.3
Average Difference	34.1	Standard Deviation of the Differences	ation of the Di	ferences	8.8	Relative Accuracy	uracy		13.3%
Confidence Coefficient	6.7	Average Refe	Average Reference Method, lb/hr	lb/hr	308.5	308.5 Average CEM, lb/hr	I, Ib/hr		342.7

U. S. Steel Corporation Minntac Mountain Iron, Minnesota

TABLE 4

## RATA RESULTS SUMMARY Line 6 Waste Gas Stack (SV144) May 22, 2018

Sulfur Dioxide Emission Rate Relative Accuracy - Calculated Using the Reference Method Average	re Accuracy - (	Salculated Usi	ing the Refere	nce Method	4verage	Relative Accuracy Limit	uracy Limit		20%
.सं/ <u>स</u> ८७	Run 1	Run 2	Run 3	Run 4	Run 6	Run 8	Run 9	Run 10	Run 11
002, 2011	1026-1047	1107-1128	1145-1206	1222-1243	1418-1439	1539-1600	1539-1600 1615-1636 1647-1708	1647-1708	1721-1742
Ref. Method Ib/hr	31.3	32.7	28.9	29.0	32.4	33.6	36.3	32.6	32.8
CEM lb/hr	30.2	32.1	29.2	26.0	30,5	31.9	34.6	33.4	33.1
Difference	-1.1	9.0-	0.3	-3.0	6.1.	-1.7	-1.7	0.8	0.3
Average Difference	6.0-	Standard Devi	Standard Deviation of the Differences	ferences	1.3	Relative Accuracy	uracy		6.0%
Confidence Coefficient	1.0	Average Refer	Average Reference Method, lb/hr	lb/hr	32.2	Average CEM, lb/hr	ı, lb/hr		31.2

Oxides of Nitrogen Emission Rate Relative Accuracy - Calculated Using the Reference Method Average	tive Accuracy	- Calculated L	Jsing the Refe	rence Metho	d Average	Relative Accuracy Limit	uracy Limit		20%
w/di ON	Run 1	Run 2	Run 4	Run 5	Run 6	Run 8	Run 9	Run 10	Run 11
TOTAL SYCAL	1026-1047	1107-1128	1222-1243	1310-1331	1418-1439	1539-1600	1615-1636 1647-1708	1647-1708	1721-1742
Ref. Method lb/hr	260.8	263.7	263.3	263.5	264.2	253.8	253.8	246.8	245.5
CEM Ib/hr	290.8	300.1	291.3	293.0	295.4	286,3	286.1	280.7	279.1
Difference	30.0	36.4	28.0	29.5	31.2	32.5	32.3	33.9	33.6
Average Difference	31.9	Standard Devi	Standard Deviation of the Differences	ferences	2.6	Relative Accuracy	uracy		13.2%
Confidence Coefficient	2.0	Average Refer	Average Reference Method, lb/hr	lb/hr	257,3	Average CEM, lb/hr	1, lb/hr		290.5

U. S. Steel Corporation Minntac Mountain Iron, Minnesota

# TABLE 5

# RATA RESULTS SUMMARY Line 7 Waste Gas Stack (SV151) May 23, 2018

Sulfur Dioxide Emission Rate Relative Accuracy - Calculated Using the Reference Method Average	re Accuracy - (	Salculated Usi	ing the Refere	ence Method A	werage	Relative Accuracy Limit	uracy Limit		20%
44/4I C3	Run 1	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10
502, 1271	0830-0851	1055-1116	1126-1147	1158-1219	1230-1251	1302-1323	1334-1355 1405-1426	1405-1426	1437-1458
Ref. Method Ib/hr	37.4	61.9	65.1	53.8	60.7	84.4	58.6	27.75	64.9
CEM lb/hr	33.7	55,7	60.4	48.5	56.0	81.8	57.8	58.8	66.7
Difference	-3.7	-6.2	-4.7	-5.3	7.4.7	-2.6	8.0-	1.1	1.9
Average Difference	-2.8	Standard Deviation of the Differences	ation of the Di	fferences	2.9	Relative Accuracy	uracy		8.2%
Confidence Coefficient	2.2	Average Refe	Average Reference Method, lb/hr	lb/hr	60.5	60:5 Average CEM, Ib/hr	í, ib/hr		57.7

Oxides of Nitrogen Emission Rate Relative Accur	ative Accuracy	racy - Calculated Using the Reference Method Average	Jsing the Refe	rence Methoo		Relative Accuracy Limit	uracy Limit	: :	20%
-4/4I ON	Run 1	Run 2	Run 3	Run 5	Run 6	Run 7	Run 8	Run 9	Run 10
NOX, IDIII	0830-0851	1022-1043	1055-1116	1158-1219 1230-1251	1230-1251	1302-1323	1334-1355	1405-1426	1437-1458
Ref. Method lb/hr	182.0	315.5	323.5	309.7	316.7	330.5	267.3	304.0	301.9
CEM lb/hr	196.3	336.9	348.9	338.1	342,9	359.7	297.4	333.7.	332.8
Difference	14.3	21.4	25.4	28.4	26.2	29.2	30.1	29.7	30.9
Average Difference	26.2	Standard Dev	Standard Deviation of the Differences	ferences	5.3	Relative Accuracy	uracy		10.3%
Confidence Coefficient	4.1	Average Refe	Average Reference Method, lb/hr	lb/hr	294.6	294.6 Average CEM, lb/hr	I, lb/hr		320.7

#### Summary Table by Monitor Downtime Type U. S. Steel - Minntac 2nd Quarter 2018

#### NOx

D	Description
·	Automatic Calibration
	Data Handling System Malfunction
	Excess Drift Ancillary Analyzer
	Excess Drift Primary Analyzer
2	Primary Analyzer Malfunction
2	Sample Interface Malfunction
0	Automatic Calibration
0	Data Handling System Malfunction
0	Excess Drift Ancillary Analyzer
	Excess Drift Primary Analyzer
	Primary Analyzer Malfunction
2	Automatic Calibration
7	Data Handling System Malfunction
0	Excess Drift Ancillary Analyzer
13	Excess Drift Primary Analyzer
2	Primary Analyzer Malfunction
1	Automatic Calibration
0	Data Handling System Malfunction
0	Excess Drift Ancillary Analyzer
0	Excess Drift Primary Analyzer
23	Primary Analyzer Malfunction
1	Automatic Calibration
0	Data Handling System Malfunction
0	Excess Drift Ancillary Analyzer
5	Excess Drift Primary Analyzer
0	Primary Analyzer Malfunction
	0 0 2 8 2 7 0 13 2 1 0 0 0 23 1 0 0 0 5

#### SO2

Line	Duration (Hrs)	Description
Line 3	4	Automatic Calibration
	7	Data Handling System Malfunction
	6	Excess Drift Ancillary Analyzer
	4	Excess Drift Primary Analyzer
	2	Primary Analyzer Malfunction
Line 4	0	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	8	Primary Analyzer Malfunction
	0	Preventative Maintenance
Line 5	2	Automatic Calibration
	7	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	2	Excess Drift Primary Analyzer
	2	Primary Analyzer Malfunction
	0	Preventative Maintenance
Line 6	2	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	12	Excess Drift Primary Analyzer
	0	Primary Analyzer Malfunction
Line 7	0	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	0	Primary Analyzer Malfunction